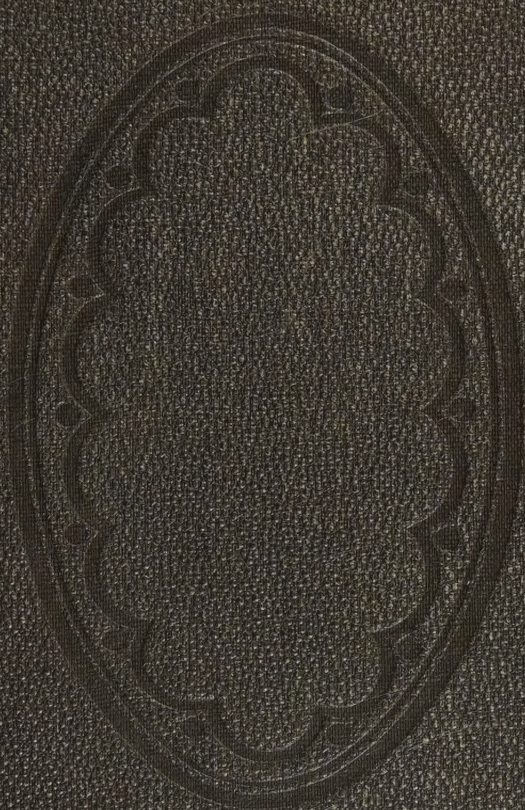


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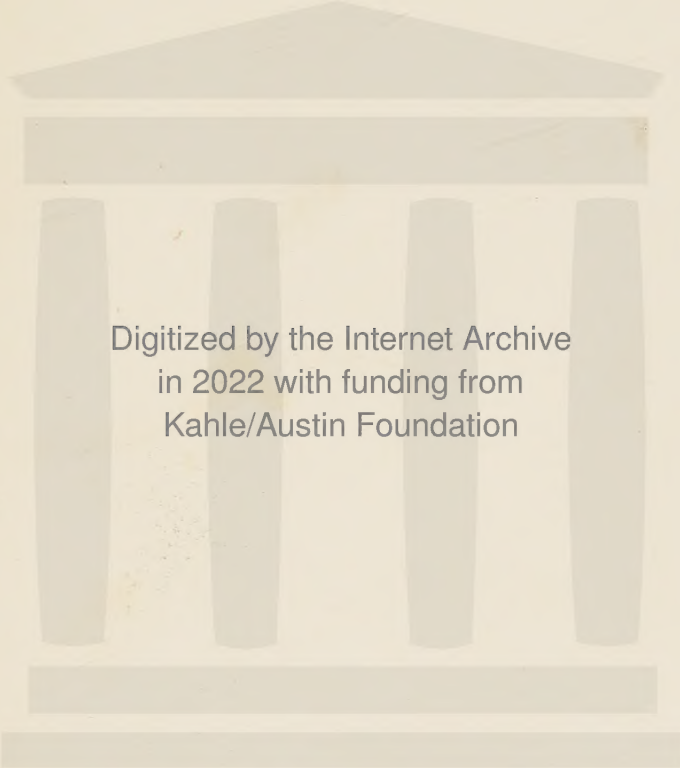
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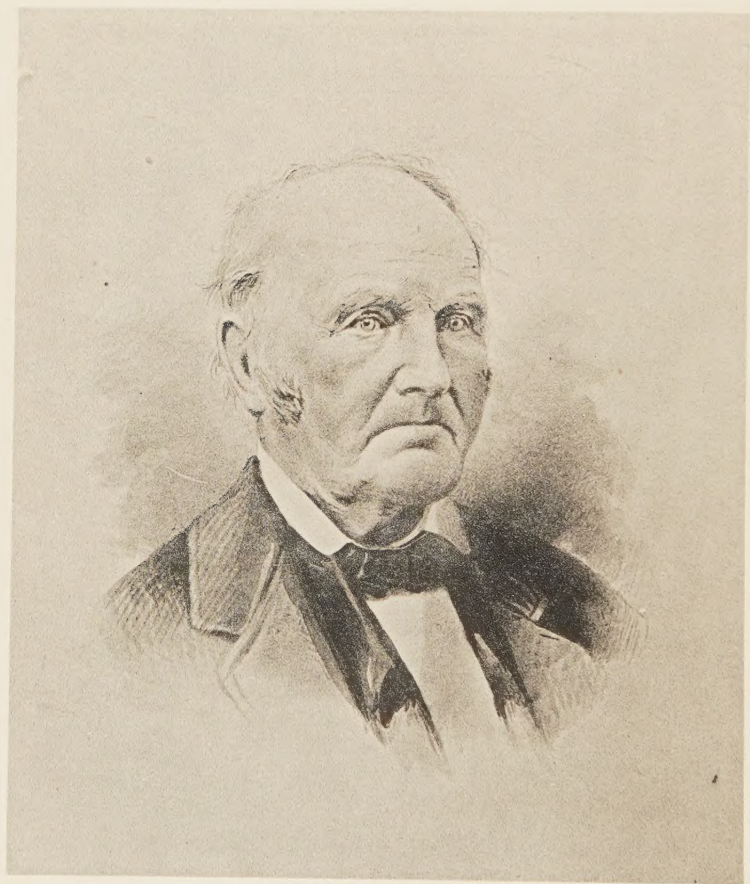
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NEW HAMPSHIRE AGRICULTURE.

THIRD ANNUAL REPORT

OF THE

BOARD OF AGRICULTURE

TO

HIS EXCELLENCY THE GOVERNOR.

MAY 1, 1873.

PREPARED BY

JAMES O. ADAMS, SECRETARY.

NASHUA:

ORREN C. MOORE, STATE PRINTER.

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INTRODUCTORY.

To His Excellency the Governor:

The report of the Board of Agriculture for the past year, constituting the third volume of "New Hampshire Agriculture," is herewith communicated for the consideration of the Legislature and the people of the State.

With many deficiencies and some matter merely formal in its character, the volume contains a liberal amount of practical agricultural information, which has been contributed by members of the Board and others, or with much care and labor has been collected from reliable sources.

It is presented to the farmers of New Hampshire and the friends of progressive agriculture, with the earnest desire that it may prove a source of profitable instruction, encourage the practical farmer to renewed efforts for improvement, and stimulate men to engage more vigorously in the cultivation of the soil.

JAMES O. ADAMS,

Secretary.

CONCORD, April 21, 1873.

BOARD OF AGRICULTURE.

ORGANIZED FOR THREE YEARS, AUGUST, 1870.

ORIGINAL MEMBERS.

Merrimack County — Moses Humphrey, Concord.
Hillsborough County — James O. Adams, Manchester.
Rockingham County — Joseph F. Lawrence, Epping.
Carroll County — W. H. H. Mason, Moultonborough.
Cheshire County — S. W. Buffum, Winchester.
Coos County — Nathan R. Perkins, Jefferson.
Belknap County — Thomas J. Whipple, Laconia.
Strafford County — Charles Jones, Milton.
Sullivan County — Edward H. Brown, Croyden.
Grafton County — Luther B. Hoskins, Lyman.

APPOINTED DURING THE FIRST YEAR.

Strafford County — Hiram R. Roberts, Rollinsford, *vice* Mr. Jones, resigned.

Sullivan County — John S. Walker, Claremont, *vice* Mr. Brown, resigned.

Belknap County — Thomas Cogswell, Gilmanton, *vice* Mr. Whipple, who declined.

APPOINTED THE THIRD YEAR.*

Grafton County — Charles F. Kingsbury, Lyme, *vice* Mr. Hoskins, resigned.

Belknap County — Jeremiah W. Sanborn, Gilmanton, *vice* Mr. Cogswell, resigned.

* No appointments were made the second year.

NEW HAMPSHIRE AGRICULTURE.

AN AGRICULTURAL REVIEW.

It is important to look back as well as forward—to see what has been done, that we may take lessons from experience and apply their teachings to our future course. Therefore we initiate our third volume by a brief review of the seasons and the harvests since the issue of our last annual report.

After two years of almost unexampled drought, the snows that melted late in March, 1872, were rapidly absorbed by the thirsty earth. Weeks passed; but little rain fell upon the ground, and there were fearful indications of a severer drought during the coming season than had yet visited us. Grass sent up few and sickly blades, seeds deposited in the cultivated field refused to germinate, trees held back their blossoms, and streams flowed sluggishly in their channels.

June came in, as May went out, wet and warm, and so continued, giving vitality to vegetation and clothing the earth with an excess of verdure. July was wet and hot; showers were frequent, accompanied sometimes with hail, and always followed by excessive heat. August was but a repetition of its predecessor, or rather was another July intensified in heat and rain. Through September and even through all the autumn months, rain continued to fall, until the springs were filled, the ground saturated, and streams rose up to their full banks and swept over the adjacent meadows. We have seldom had a season of such excessive rains and of such sultry days, and though a rapid vegetable growth was the consequence, there was often resulting an injury of a serious character which was manifested in hay unharvested or badly made, grains mildewed and rusted, potatoes diseased and much fruit untimely destroyed.

We have no definite reports in which facts and figures are given as authority, but having passed over much of the State and met many farmers at their homes, or at fairs and conventions, we have a general knowledge regarding the condition of their barns and cellars and granaries sufficiently accurate to enable us to present a fair summary of the year.

The hay crop, which in many sections is becoming the most important, was above an average, notwithstanding the unfavorable prospect in spring. That which was first harvested was well cured, and was serviceable in the season of excessive cold that followed; but the frequent rains later in the summer proved destructive to thousands of tons of meadow and lowland grass, and seriously injurious to much that was finally harvested. Many meadows were so flooded as to be inaccessible, and were left untouched by the scythe and rake. The "second crop" on upland fields was immense.

Corn was put down as good, though an unusual amount of fungus growth appeared in the fields.

Wheat was an average, oats a little extra, so far as our observation extended, while rye and barley, being little cultivated, did not vary from other years enough to make the change felt in any locality.

The potato crop was not excessive in the southern portions of the State, though large in the northern parts. The potato made a vigorous growth of stalk, but the very warm weather at the time the tubers were setting and growing had no favorable effect on the crop. Great heat as well as great moisture are unfriendly to a harvest of first quality of potatoes.

In regard to other root crops we have only an impression, which is that a good yield was obtained in those sections where proper attention was given. We are confident that our farmers mistake their own interest when they neglect the cultivation of turnips and other roots for stock feeding. They can be grown at a cheap rate, especially the flat turnip. Ten cents a bushel is regarded as the maximum cost of production, when rightly managed, while their value compared with hay is not less than twenty cents.

Fruit was abundant, but was inclined to early decay, though it has kept unusually well during the winter. The price of orchard fruit has been moderate. In many sections labor was so high that much fruit remained unharvested, and cattle and swine were allowed to feed on it in the orchards. Most of the small fruits

were abundant, and though no statistics regarding them were kept, there is no doubt but that the harvest of the ordinary wild berries was a source of revenue to be estimated by thousands of dollars.

The pasture lands of the State have been depreciating in value year by year, and especially during the successive seasons of drought. The past year there has been no apparent impoverishment, but in many sections a real gain. This, with the great amount of second growth of clover, the product of forage culture for summer and autumn feed, has enabled the dairyman to make an increased profit. The larger amount of milk produced in the State, and consequently the increase in butter and cheese, was favorably felt in summing up the profits of the year.

There has been a source of income to the farmer the past year that he may not at once appreciate. It is in the growth of his woodland products. Testimony is given to show that the growth is nearly twice as great as during the preceding season. If the severe winter weather has not destroyed the extra product of the summer, the result will be more fully appreciated when the forests are again clothed in their summer foliage.

We might refer to other sources of gain to the cultivators of the soil, such as the making of maple sugar, the keeping of bees, garden culture, poultry breeding, and other miscellaneous interests, but the statements would be even more general than those regarding other matters.

There has been no epidemic among the neat stock, or other domestic animals except horses. The loss to the owners of carriage and working animals by this disorder cannot be readily computed. This was the only source of loss to the State in live stock during the year, unless we include occasional damage done to sheep by dogs.

During the autumn, fairs were held in eight of the ten counties, and in several of them two or more such gatherings took place. It was evident from exhibitions made at these shows that animals in all departments are improving. We have better horses, more valuable cattle, more profitable sheep and superior breeds of swine.

Farmers are using improved implements, adopting machinery and animal labor to supply the deficiency in human muscle. They are making it an object to secure the choicest seed for all their crops and to adopt a better and more positive culture. They are

asking what can be done to make farming pay, and are beginning more generally to see that it is important to till the lands nearest markets and the means of transportation, and to allow all unremunerating soils to grow up to wood and timber; in other words, to apply more force and capital to less land, and reap better harvests. In short, farmers are reading and thinking. He is a poor farmer who does not take an agricultural paper, attend farmers' clubs and engage in agricultural fairs. The intelligent and industrious farmer succeeds, while the ignorant and idle fail. In farming as in trade, application, energy and skill are needed, and our New Hampshire cultivators of the soil are beginning to see and appreciate it, and act accordingly.

With this brief retrospect of the operations on the farm, and the influences which promoted or injured the harvests of 1872, we turn to the appropriate work of the Board and make a record of our labors for the third year of our organization.

MEETINGS OF THE BOARD.

During the past year there have been twenty-two meetings of the Board,—four for business, and eighteen for the discussion of subjects connected with the interest of agriculture. Besides these, the Secretary has attended a majority of the Annual Fairs and has been present at meetings of local associations and farmers' clubs and taken part in the exercises. Messrs. Lawrence, Roberts, Humphrey and Buffum also attended similar meetings and contributed to their efficiency by written addresses and extemporaneous remarks. There were also occasional gatherings of a social character which will be hereafter named in these pages.

BUSINESS MEETINGS.

The first meeting within the year was held, according to the custom of the Board, during the session of the Legislature. The full Board was present, and by invitation the Committees on Agriculture in both branches of the Legislature were present and expressed a readiness to co-operate with the Board. The object of the conference was to consider what legislation was necessary to render the Board more permanent and efficient, and discuss the importance of more stringent laws for the benefit of the farming interests. After an expression on the part of various gentlemen in favor of an enactment that would place the Board on a firmer basis, the details of the work were left to the Chairman of the Board and Mr. Beede, a member of the House Committee. Their efforts, aided by many efficient workers, resulted in the passage of a judicious law, with no open opposition in the Senate and with but few negative voices in the House of Representatives.

The question of adopting more vigorous measures to protect farmers against loss from spurious and worthless fertilizers was raised, and drafts of bills were read and discussed by members of the Board and of the Committee on Agriculture. It was at length decided that the Board would favor any action that should tend to encourage the introduction and use of genuine fertilizers, and at the same time protect the farmer from the imposition of dishonest dealers and manufacturers. The law that passed the legislature a few days later, was influenced by the discussion in the Board, but was not regarded as the special result of any official action on our part.

An invitation was given by Mr. Perkins, member from Coos county, to the Board to make a visit to Northern New Hampshire, especially to Lancaster and the mountain region, and be his guests during their stay in that section. The proposition was favorably received, and a sub-committee was charged with the duty of making the necessary railroad arrangements. This movement led to the organization of a special excursion, under the patronage and direction of John E. Lyon, Esq., President of the Boston, Concord and Montreal Railroad, of which mention will be made in this report.

The second meeting was held at Concord, on the 30th of July, when the Board organized under the amended statute of the late session, and voted to occupy rooms in the State House as headquarters, as soon as they should be in readiness.

Voted, That the salary of the Secretary begin the first day of August, the commencement of the third year of the operations of the Board.

Voted. That the Secretary attend the New England Fair, the State Fair and as many county and local fairs as practicable and communicate such information concerning them as he might think important.

Voted, That Dr. Mason represent the Board at the Coos County Fair, and at the New England Fair, that each member visit those fairs most easily accessible.

Voted, That a certificate be given the Chairman as delegate to any western fair he may visit while on his excursion to the west.

The third meeting was held at Dover on the second evening of the State Fair. In the absence of the President Mr. Lawrence

was elected Chairman *pro tem*. As the Board was not fully represented, no important business was transacted.

The fourth meeting was held on the 14th of November, at Room No. 2, State House, which had been assigned and furnished for the use of the Board. Present, all the members except Messrs. Cogswell and Walker. Dr. Kingsbury, the new member from Grafton County, appeared and took seat with the Board.

It was voted to hold meetings during the winter at Colebrook, Lancaster, Plymouth, Lyme, Acworth, New London, Franklin, Wolfeborough, Gilmanton, Dover, Hampton, Deerfield, Nashua, Peterborough, Marlborough and Westmoreland, and such other places as may be hereafter named.

The Secretary was authorized to fix the times for holding the meetings.

The Secretary was authorized to correspond with other Boards with reference to holding a joint meeting of New England Boards for mutual consultation. He was also authorized to communicate to the officers of the State Agricultural Society a proposition for a union meeting.

Subjects were assigned members of the Board, for consideration at the various meetings they should attend, and an invitation was given to volunteers to present written papers on given subjects.

A resolution of thanks was passed for the aid that had been rendered by gentlemen who had attended the public meetings and engaged in the exercises.

It was voted that such matters as regarded immediate action should be left to the discretion of the Secretary, who should consult such members of the Board as were easily reached.

Voted, That the Secretary be authorized to invite Messrs. Joseph B. Walker of Concord, Joseph Kidder, Manchester, Warren Brown, Hampton Falls, S. C. Pattee, Warner, D. H. Goodell, Antrim, and other gentlemen interested in rural pursuits, to accompany the Board at meetings and assist in the debates and other exercises.

No formal business meetings were held during the winter and spring, but whenever two or more of the members have met at the various county gatherings or elsewhere they have discussed such matters as were presented for consideration, and all needed action has been taken by the Secretary.

PUBLIC MEETINGS.

INTRODUCTORY SESSION.

As the members of the Board of Agriculture were about to hold a business session at Concord, on the 14th of November, the Secretary suggested that such members as were accustomed to grow fruit bring in a few specimens for examination and discussion. Invitations were given to others, and in short to the public, to send in samples, and come in person to engage in making the occasion one of interest and general profit.

At two o'clock on that day a party of thirty or more, besides the members of the Board, met in the Council Chamber, and spent the afternoon in a pleasant, conversational discussion of more than a hundred specimens of apples, with a few pears that were exhibited.

Mr. C. C. Shaw of Milford had the largest, and beyond question the handsomest display. He had twenty-four varieties of apples of his own growing, and thirteen varieties which were grown by his neighbors.

His own list was as follows: Northern Spy, Baldwin, Esopus Spitzenburg, Black Gilliflower, Golden Russet, Dexter, Hubbardston Nonesuch, Belleflower, Twenty-ounce Pippin, Roxbury Russet, Washington, Fameuse, Spofford's Sweet, Shaw's Favorite, Hurlburt, Rome Beauty, Sheepsnose Sweet, Danvers Winter Sweet, Red Russet, Flushing Spitzenburg, Russet Sweet, English Golden Pippin, Rhode Island Greening, and one unknown variety.

The list belonging to his neighbors included the Quince, Holland Pippin Hunter, Twenty-ounce apple, Fallowater, Ribstone Pippin, Pennock's Red Winter, Lady's Sweeting, Cogswell, American Golden Pippin, Blue Pearmain, Hunt's Russet, and another whose name we do not recall.

It really was a very fine show, and indicated the manner in which Mr. Shaw does his work.

J. W. Noyes of Chester had the Pomme Grise, Nodhead, English Russet, Hubbardston Nonesuch, Gilliflower, English Golden Pippin, Ribstone Pippin, and Striped Pippin or Prentice. The last was not claimed as a real name, and the committee to whom it was referred rejected the name "Prentice," but did not endorse the term "Striped."

Henry Moore of Chester sent a handsome red apple for name. The committee did not decide its patronymic.

Wm. Greenough of Chester had the Hubbardston Nonesuch, Pomme Grise, New York Greening and "Fall Russet."

S. S. Chamberlain of Chester had eight varieties, and has the credit of inducing the owners to send the preceding list from Chester. His were Baldwins, fall and winter, Gilliflower (not Belleflower), Rhode Island Greening, Pomme Grise, Hubbardston Nonesuch, Roxbury Russet, Porter. He also had two plates of pears — the Winter Nelis and the Beurre d'Auremburg.

Capt. S. F. Leonard of Chester presented the Pound Sweeting, Ramsdell Sweeting, Ribstone Pippin, King of Tompkins County, Hubbardston Nonesuch, Baldwin, Northern Spy, Roxbury Russet, Fall Russet, Red Russet, Golden Pippin, Rhode Island Greening, New York Greening, Flushing Spitzenburg, Red Nonesuch.

Stephen Holt of Epping had a plate of large, handsome Baldwins.

Dr. Flagg of Pembroke was present with a plate of Seek-no-furthers.

M. F. Dodge of Manchester had Baldwins, Hubbardston Nonesuch, the Northern Spy, Roxbury Russet, Blue Pearmain and Gilliflower.

Joseph Kidder of Manchester had three plates of large and luscious pears — the Duchess.

Dr. Mason of Moultonboro' had the Golden Russet, Roxbury Russet, Blue Pearmain, Northern Spy, Wells Sweeting, Alexandria, and two varieties with names unknown.

Dr. Mason also brought three handsome specimens, names unknown, from the orchard of B. M. Mason of Moultonboro'.

Judge Roberts of Rollinsford made a fine show of his own fruit and that of his own immediate vicinity. He had from his own premises the Gardner Sweet, Cogswell, Nodhead, Holland Pippin, Nutfield, Gravenstein, Cross Orange, Golden Russet, Hubbardston Nonesuch, Roxbury Russet, Virginia Sweet, Baldwin, Winter Green Sweet, Northern Spy, Vermont Baldwin, American Pippin, one called the Irish Favorite and one nameless.

For J. D. Roberts he presented the Fisher, Swaar, Rhode Island Greening, Edwards Russet, Ledge Sweet, and one nameless. For F. M. McDuffee Rochester, the Goddard Nonesuch. For L. H. Yeaton of Rollinsford the Goddard and the Lopa.

There were about one hundred and three plates and about seventy varieties of apples and five of pears.

The exhibition being an impromptu one, with no premiums to attract, fully met the expectation of those interested in its arrangement. The Secretary explained the object of the invitation to be to bring the fruit growers together, compare varieties, correct errors in name, and induce a discussion among the fruit growers which might result in giving a new impulse to the cultivation of good fruit in the State.

REMARKS OF JUDGE ROBERTS.

The Chairman confessed that he knew little about the growing of fruit, but he was glad to find that members of the Board and others who had made this unexpected exhibition had given evidence that they understood the method and could give instruction to others. He then introduced Hon. H. R. Roberts, of Rollinsford.

Judge Roberts spoke of the apple as the most important fruit, referred to its common use, and recommended its cultivation in New Hampshire. He advocated preparing the ground and cultivating it as thoroughly as for a crop of corn; the orchard must be plowed and not cropped, except by fruit. Grass does injury and in time kills the tree. He plows two or three times a year close to the trees, exercising care not to plow deep nor break roots. He prunes in the fall at first, when the tree is small, with the knife; heads back all limbs when he sets the tree, leaving no branches more than six inches long; lets limbs grow low, just high enough to clear the head; sets in the spring rather than the fall; prunes roots as well as top; puts the roots in a horizontal position nearly.

The Judge took samples of several varieties and commented on and described briefly, giving the character of the two and the period during which the fruit was in the best condition. From his remarks and the labels on his specimens, the Secretary noted the following characteristics:

American Pippin — a vigorous tree, but a shy bearer; November to February.

Baldwin — tree, a vigorous grower, broad, spreading top; wood very tender; prolific every other year; November to April.

The Vermont Baldwin, an every year bearer; tree has long, drooping limbs; October to January.

Edwards Russet — tree, high top, broad spreading limbs, a good alternate year bearer. November to January.

The Fisher — tree, bushy top, poor bearer. November to January.

Goddard Nonesuch — tree, very much resembling Baldwin; an excellent alternate year bearer; October to March.

Golden Russet — long, drooping limbs, with but few leaves; not long lived; March to June.

Gravenstein — healthy tree, good every year bearer; the most popular in New Hampshire; September and October.

Hubbardston Nonesuch — tree much like the Baldwin, wood stronger; every other year bearer; November to January.

Holland Pippin — a healthy, Baldwin-shaped tree; bears yearly, but abundantly alluvial years; October to December.

Northern Spy — limber limbed tree, a little earlier than the Baldwin. Apple liable to rot when on the tree. Fall and early winter.

Nutfield — broad topped tree, limbs long and limber, bountiful bearer alternate years, fruit not uniform in size or appearance; October to January.

Nodhead — bountiful every year bearer, limber limbed tree; October.

Ledge Sweet — tree Baldwin topped, fair bearer every other year; winter.

Roxbury Russet — tree much like Baldwin, not so rapid a grower, but stronger wood; not prolific in bearing, but produces some every year; March to June.

The Swaar — Tree similar to Roxbury Russet, poor bearer; November to January.

Virginia Sweet — tree tall and upright, prolific every other year bearer, Baldwin topped tree, very strong wood resembling rock maple; December to May.

He discussed several varieties that had not the honor of a name, some of them of superior merit.

On being questioned, he said that the canker-worm appeared in his orchard, but that he fought it with tarred paper and printer's ink, and had not been troubled much since. He had to fight the borer yet, and the only way to arrest the insect's work is to scrape the tree at the surface of the ground and dig out the destroyer.

MR. KIDDER'S REMARKS.

Mr. Kidder of Manchester was called up to tell about his big pears that appeared on the table. He thought people were beginning to see the advantage of growing pears. But it was understood that we are to be cheated in the trees we buy, for the dealer has "just what is ordered," though it proves to be a different thing after it is set. He gave his experience in grafting a pear that was not valuable. He inserted the scion between the wood and the bark, and applied his wax. The result was satisfactory.

He thought pears required a rich soil and one inclined to be moist. In his case he removed the sand and filled the holes with rubbish; did not sink the tree below its natural position; took care regarding the roots, leaving them in a natural position; didn't believe in watering much after setting; approved mulching; used saw-dust, and hilled up in autumn.

Mr. Kidder spoke at considerable length and went into the details of a judicious culture of the pear.

MR. MANNING'S REMARKS.

J. W. Manning of Reading, Mass., explained how it happened that many of the trees which nurserymen sold were condemned. It was sometimes the case that trees were defective, but it is oftener that the treatment of them in setting and subsequently ruins them. He held to banking up trees; it kept the ground from heaving; did not regard it necessary to dig large holes for the apple; could set trees rapidly and make them live; liked the summer for trimming, and does it with a knife generally; advocated keeping weeds down, and not to grow crops in orchards; discussed the pear blight, and said nobody knew much about it; the best pears grow in sheltered places; but they want the sun. He had set trees in the fall and had good success, especially if the ground was underdrained.

A COMMITTEE TO NAME APPLES.

At this point a committee was appointed to consider the nomenclature of the fruit exhibited, consisting of J. W. Manning of Reading, C. S. Eastman of Concord and C. C. Shaw of Milford. Subsequently, Mr. A. T. Sanger of Concord was added. The committee, at a later hour, having examined the fruit, decided in

regard to the names of a few varieties, but the greater number of specimens sent in to be named remained nameless still.

MISCELLANEOUS TALK.

Mr. Walker of Concord asked for a succession of three pears that would cover the most months in the year.

Mr. Gilman of Nashua named the Bartlett, Louise bonne de Jersey and the Beurre Diel.

Other parties named others, such as the Lawrence, for winter; the Flemish Beauty, but that cracks; the Winter Nelis, which we can't grow here; the Belle Lucrative, the Seckel and many others.

Mr. Holt of Epping said he had ascertained that his town, after appropriating all the apples and cider its people wanted this year, had sold enough to pay the entire tax of over \$10,000, and they never sold the best.

MR. LEARNARD'S REMARKS.

Capt. S. F. Learnard of Chester saw a profit in orcharding, not only in the fruit grown, but in the increased value of the farm as a whole in consequence of the orchards. He knew people crowded their trees too close together. He had set them twenty feet apart, and then thirty, and found that too close. He recommended thirty by forty feet. This gave light and air to the fruit and improved the quality. He held to fall pruning, rather high. When he harvested his apples he put them in a bin and not in barrels, and felt sure it was the best way. It cost about sixty-seven cents a barrel to get his fruit to market, and the price now is from two dollars and fifty cents upward. He held to scraping the trunk of the tree and about the roots to get rid of canker worms and borers. Would do it in September. There was ten thousand dollars worth of surplus apples and cider in Chester this year. Clean culture was better than manure.

MISCELLANEOUS REMARKS.

B. F. Hutchinson of Milford related a fact about an orchard in his town on a rye field which would produce but little, and was set with apple trees contrary to good judgment and the principles of fruit growing. The subsoil was gravelly, and then came cobble stones. On seven acres, two years ago, the crop brought one

thousand dollars; this year it counted up to seven hundred barrels. The orchard had little culture and took care of itself.

Mr. Gilman of Nashua knew the locality to which Mr. H. referred, and acknowledged it to be good for fruit. Other orchards did well. There was a natural condition of the soil, or of some elements, for fruit.

Mr. Walker of Concord told the meeting how he had tried to grow the apple and failed, while his neighbors opposite him succeeded. He had learned that they had a clay subsoil, while he, though near, had none.

At this point the meeting adjourned until evening.

EVENING SESSION.

The eccentric Dr. Flagg entertained the company for a few minutes in relating his experience. He don't plow his orchard, but mows and keeps grass down around trees by mulching.

SENATOR BROWN'S REMARKS.

Warren Brown of Hampton Falls, Senator from No. 1, remarked that some years ago there was a rage in his vicinity for apple growing, and thousands of trees were set, but the canker worm had taken possession, and fruit was no more. There are two kinds of the pest. The largest kind goes up in the fall and produces a striped worm; the other kind in the spring, and produces a black worm. Even when the insect spares the trees, the crop is not very profitable. It costs too much to harvest. In 1855 full two thousand six hundred barrels were gathered from three farms; now there are none. A farm without orcharding will bring more in his section than one of equal merit that has trees, provided only there is enough for home use.

MANY OTHER SPEAKERS.

Mr. Manning urged high cultivation for pears, and the use of ashes. He again expressed a preference for pruning in June, and on being asked why, said he could then shape a tree better, the wound would quickly heal; the shoots stand out prominently in June, and we can see what to cut. It will heal over quicker, and not dry back into the wood.

Mr. Lawrence inquired if the soil in some sections had not been overtaxed by the growth of trees, and if the mistake is not made of keeping trees on the same soil. The conclusion was that this

had been done in some cases. Mr. L. thought if the experience of the Epping people in fruit growing was worth anything,—and Chester's was a similar example,—it would pay to grow fruit. He compared this product with potato growing in point of profit. He argued that trees should be differently managed on different soils; believed in applying ashes.

Mr. Warren Brown further discussed pear culture, and thought if we could get good trees, it would do to encourage the culture.

Dr. Kingsbury of Lyme, member of the Board for Grafton County, said for every effect there must be a cause, especially for success in fruit growing. He urged that the farmer learn the character of the soil he cultivates, and plant his trees in such soil as the tree required, or else supply the deficiency. He then gave his experience in planting trees, where it was said none would grow. He succeeded on the third trial, having taken trees from a latitude more northern than his own, and planted outside of former growths, around the border of his lot. He favored cutting off the top severely, leaving but little at first. It was important to get the tree well rooted.

He suggested that it used to be the case that pear trees exposed to winds were productive, and he asked if there was not too much tenderness shown the tree nowadays.

Henry W. Herrick of Manchester discussed the character of the soil for fruit trees, instancing the limestone formation as preferable to granite, but maintained that the deficiency could be supplied by proper applications. He said it took labor to bring success. The soil right, and good trees growing vigorously, will not make a sure crop. There are hordes of insects to fight. But they may be mastered, as the vine-growers of France overcome the grape-destroying insects. He thought it took near twenty years in our State to get the growth that eight would give in the rich West, but high cultivation would make up the deficiency.

In the South trees bear every year. He thought we might secure the same result partially, by proper culture.

Mr. C. C. Shaw of Milford referred to some suggestions which had been made, and specified those that he approved and which were sustained by his own practice. He gave an interesting account of his own efforts and his success in fruit growing.

Remarks were made by many others, and the meeting at length assumed a conversational turn, and many practical remarks were made which we cannot report.

The meeting and the presentation of the samples of fruit were an entire success, and though not fully reported here, it furnished material which will be applied from time to time in the culture of fruit.

A few of the speeches made on this occasion have been written out more fully and will appear in connection with the further consideration of the subject of fruit growing.

THE BOARD AT COLEBROOK.

The Board, in accordance with an expressed desire on the part of the citizens of Upper Coos, held a meeting on Tuesday, December 3, at Colebrook. Messrs. Buffum, Lawrence and Adams of the Board were present, and Mr. Kidder of Manchester lent his assistance as a volunteer. The meeting was held in the Court House, a good number of citizens being present notwithstanding a heavy fall of snow during the day. Hon. Ethan Colby called to order, and expressed the gratification of his neighbors at the compliment paid by the visit, and introduced Dea. Buffum, member of the Board from Cheshire County, as the Chairman.

OPENING REMARKS.

On assuming the duties of the chair, Dea. Buffum referred to the benefit which discussions gave those who engaged in them, to the favorable character of the soil in that section, and to the encouragement which the Board received in going to that locality. The meeting might seem small, but it was not discouraging. Farmers were not apt to talk enough, though they have thoughts. These meetings teach men to talk. The young men are here, and that is a matter of encouragement. God made a majority of us to be farmers, and placed us here to labor and not to be drones. Mr. Buffum then went on to show that farming would pay, to say nothing of the pleasure of the pursuit.

SHEEP AND CATTLE.

He explained that Dr. Kingsbury of the Board was appointed to read a paper on "Wool Producing," but had been prevented from attending the meeting. He discussed the importance of the

sheep business, referred to the time when many sold out their flocks for lack of profit, but the sudden advance and the present profit in sheep breeding show how great was their mistake.

From this point he proceeded to discuss cattle breeding, and took strong positive ground in favor of breeding from thoroughbreds on the male side, with the view of breeding up. He cited examples of the great value of well-bred animals, and of the product of milk and butter from single cows. A cow that will produce one hundred or one hundred and fifty dollars income in a year may be kept as cheaply as one that yields only half or a fourth as much. A cow that is worth keeping will return more than a hundred dollars a year. Character in a cow is worth more than color. Knock scrub bulls in the head, said he, purchase pure bloods and double the value of the stock on the farm in ten years. Alderney cows are the best for butter; Short Horns for cheese and beef. Short Horns will bring a cent a pound more than any other kinds, and on the whole are most profitable to raise.

Thomas P. Judd, Esq., of Canaan, Vermont, being pressed, endorsed the doctrine of the chairman and gave his experience on the farm. He keeps a large herd of grade cows, and has a farm with seventy-five acres in one field, not a foot of which cannot be turned by the plow and will not readily yield to the hoe.

Mr. S. P. Whittemore of Colebrook gave a statement of his success in the sheep business. He had eighty-seven Leicester and South-Down grades. These animals consumed a ton of hay in seven days without grain. He then gave a pint a day of a mixture of corn, oats and buckwheat to each sheep; omitting the buckwheat in March. He raised seventy-six lambs. These lambs and the fleeces of the sheep brought him over five hundred dollars.

Mr. J. E. Lombard sustained Mr. Whittemore in advocating sheep husbandry. He had just bought one of the Cochrane bucks at Compton, Canada, with the view to improve his flock.

Mr. Lawrence showed that Mr. Whittemore, by his manner of feeding, sold his hay for nearly twenty dollars a ton at his farm, when the local price was only twelve dollars.

After general remarks by the Secretary the morning session closed.

AFTERNOON SESSION.

In the afternoon the audience, greatly increased, re-assembled at one o'clock and a session of four hours was held, the people remaining to that late hour very patiently.

The Secretary occupied a brief period in explaining the operations of the Board and urging upon the farmers the formation of agricultural associations, and the mutual discussion of rural subjects. He enumerated the list of the several societies in the State from town club to the State Society, and commended the efforts of the State Society in sustaining annual meetings for discussion.

ADDRESSES.

Two written papers were presented in the afternoon, both of which appear in this volume. First, Mr. James O. Adams, the Secretary, read a paper on the "Potato and its culture," giving its history, statistics of production, manner of cultivating, the requisite soil and dressing, the diseases and their remedies, and the manner of storing.

He was followed by Mr. J. F. Lawrence, with an essay on "Manures."

DISCUSSION.

After this a general discussion took place on the subjects of the two papers, and Hon. Hazen Bedel followed, giving some account of the potato culture in that vicinity. He named starch making as the great object of the culture; said they found some rot this year; that potatoes were less starchy than usual, yielding about eight pounds of starch to a bushel.

Mr. Bedel said that there was a difference in the practice of cultivating potatoes for the table and for the factory. For the latter purpose they were put in drills, the ground being marked for the drills, the healthiest Californias selected for seed, cut into pieces with two eyes each, covered with a plow, cultivated with a horse-hoe, dug with the fork-hoe and sent directly to the mill. The product was three hundred and fifty bushels to the acre and upwards, while for common use the yield was from one hundred and twenty-five to one hundred and fifty bushels. He had seen but little disease in the Californias. He felt that the virtue of the soil should be kept up, and this was done to a great extent by ashes, which, on personal inquiry, he said he bought for twelve and one-fourth cents per bushel.

Mr. Joseph Kidder of Manchester spoke for a few minutes on the character of soil adapted to the potato, referred to the influence of the season on the crop, to the high price of labor, to the necessity of pulverization of the soil, and to the potato disease which he suggested might be caused by an insect instead of a fungus. He argued that if the best table potatoes contained the most starch, the manufacturers ought to be willing to encourage their cultivation for the mill. Mr. Kidder referred to the exhaustion of the soil which is caused by potato culture, and illustrated it by many examples within his own observation.

The subject was further discussed by Messrs. Buffum, Lawrence, and others, all urging that care be exercised in regard to the soil, lest its potash and other elements be exhausted.

THANKS EXPRESSED.

As the time assigned for the meeting had been fully occupied, Mr. Adams expressed his great gratification with the attendance and the interest which had been manifested in the meeting.

Mr. Lawrence expressed a similar sentiment.

Mr. Dudley, in behalf of the citizens of Colebrook, expressed their appreciation of the compliment paid their town by the visit of the Board, and presented a resolution of thanks which was unanimously passed.

THE BOARD AT LANCASTER.

On the afternoon and evening of December 4, the Board met at Lancaster and held two sessions. Hon. N. R. Perkins, member from Coos County, presided, and after introductory words presented Mr. Buffum, who commenced by saying that had he any skill in talking he would answer that important question,

HOW TO MAKE FARMING PAY?

Young men leave the farm because they don't see how to make it pay. We farmers are in fault. We do not adopt a system to show our loss and gain. We cannot tell the cost of producing a crop, and therefore don't know what pays and what don't. We must determine this matter and practice that which will return a profit.

KEEPING COWS FOR MILK.

He said an ordinary cow would yield about fifteen hundred quarts of milk per year, which made into butter and cheese would not average more than two cents a quart income. This won't pay. Now increase the quantity to two thousand quarts, or two thousand five hundred, and you see a profit; add a little more and the result will be, instead of a receipt of thirty dollars, we get sixty.

It is the same in other departments. An average price of butter with us is but twenty-two and twenty-five cents per pound, and this don't pay. Make an improvement so that it will average forty or fifty and you see a profit. The average price for butter in towns in certain sections in Massachusetts is sixty-seven cents—a price that pays. All butter-makers can do the same or nearly as well. We can't often buy good cows—breeders won't sell at prices we are willing to pay. We must raise them; and in so doing we must select those breeds and those families that are adapted to our immediate purpose. Ayrshires, Jerseys and Short Horns are the only bloods that dairymen will accept.

The speaker then urged the adoption of Short Horn grades for New Hampshire farmers. A full-blood bull should be bred to grade cows. He showed that the value of the neat stock in any locality could be doubled in ten years by this course. He said that the neat stock in Lancaster was worth forty-five thousand dollars. It might, without extra numbers and at little cost, be worth ninety thousand dollars.

So with sheep and other animals. So with crops in a great degree. We must have a knowledge that will enable us to determine which is best, what pays, and then act accordingly.

SHEEP HUSBANDRY.

Dr. C. F. Kingsbury of Lyme, member of the Board from Grafton County, after a general talk on the interest of agriculture, occupied a little time in consideration of the question of wool producing.

He stated that the experiments of others must be our guide. We cannot afford to go through the same process ourselves. That experience in sheep-breeding shows that one great fundamental principle is to secure a stock of sound, strong constitution, that which is adequate to withstand the rigors of our climate. A

second consideration is proper management, beginning with the proper buildings, yards and location, and thirdly the exercise of care.

The speaker related a case of a sheep husbandman in his neighborhood who had made forty thousand dollars sheep-breeding; not by speculating in high-priced animals, but in a legitimate line of breeding and selling lambs and wool. He made it a prime object to keep healthy sheep, not pure bloods, and to so breed as to be constantly increasing the size and vigor of the animals and the amount and quality of the wool. His fleeces averaged from eight to twelve pounds. He had sold at one time twenty-one lambs for two thousand one hundred dollars, and his wool had often been found to clear fifty-three per cent.

Others can do the same under the same circumstances, with the same intelligence and equal care. He looked after his flocks in summer as well as in winter; kept but few in a flock, had good ventilation to sheds, selected dry places for folding. Sheep need air; they always seek the high places to rest. Dampness produces the foot rot. Sheep need exercise, or they will fail. There is a great lack in this respect. It is an important item in sheep culture. Ewes especially require it, to produce healthy lambs. A mile a day is none too much travel for them.

The Lyme sheep-breeder to whom the Doctor referred was understood to be a Mr. Demick. He raised from one hundred ewes one hundred and one lambs, and from two hundred and fifty sheep two thousand five hundred pounds of wool. An example in contrast was given by the speaker, which showed that one man succeeds while another fails, and that care and study are the aids to success in all pursuits.

Mr. Adams followed and presented his paper on "Potato Culture," which occupied nearly an hour. Following this was an animated

DISCUSSION.

Mr. Perkins, a large starch manufacturer, gave some description of the process of extracting starch from potatoes, which comprised little more than grating, sifting and settling. The pulp of the factory is rich manure but is seldom saved. He plants his potatoes three feet by twelve or thirteen inches, and wants but two stalks in a hill. Less in number and larger in size is the result of small seeding. Generally sixty pounds of potatoes will yield six or eight of starch.

Mr. Brooks breaks up his ground shallow in the fall, harrows, spreads on manure in the spring, and plows deep; uses plaster and ashes; covers the tops when he digs, and thus prevents too great exhaustion of the soil.

Mr. Williams corroborated Mr. B.'s system and theory.

Most of the remaining time of the session was taken up by a discussion of the subject of the exhaustion of the soil by potato crops. The principal combatants were Judge Weeks and Mr. Lawrence, the former gentleman claiming that potatoes depended largely on the resources of the atmosphere for nutriment, and the latter advocating the theory of their great exhaustive power and warning against disregarding it practically.

EVENING.

In the evening, a larger number appeared in attendance, though the meeting was not large. Mr. Perkins, on taking the chair, made brief remarks and then introduced Mr. Lawrence, who repeated his paper on "Manures."

After he closed, Mr. Buffum referred to the practice of tobacco-raisers in applying fertilizers. They paid fourteen dollars a ton for stable manure, purchase great quantities of guano, and for the want of adequate dressing, had the past season used Indian meal; a whole carload had been applied by one man in the Connecticut River Valley. We might as well expect to raise calves without milk, as crops without manure. The fertility of the soil in the West is depreciating, and the time is at hand when manure cannot be rejected there.

Dr. Kingsbury said the soil was sick in some sections, and needed a doctor's attention. Science could prescribe if the prescription could be followed. He advised farmers to make their own phosphates and apply them. He related experiments of his own in dissolving bones in sulphuric acid.

Mr. Lawrence argued that while the farmer should save all he could, he must not neglect to add even more. It was demanded by most soils and must be had. The elements of the farm are carried off in crops and must be restored.

Mr. Adams referred to several matters that had been named, especially to the use of plaster, suggesting that his experience showed that plaster was most serviceable on dry soils, and questioned whether it was necessary that plaster be entirely dissolved before it was serviceable for a crop. He thought the office of plas-

ter was to retain ammonia and thus hold it for use as the plant required.

Judge Weeks related experiments to confirm that idea. Remarks were made by Mr. Crawford and others, when Mr. Joseph Kidder of Manchester was called out, and for ten or fifteen minutes presented the principle of "Compensation," or returning to the soil an equivalent for crops removed. He spoke effectually and was loudly applauded.

The thanks of the Board were cordially expressed to the people of Lancaster by Messrs. Adams, Lawrence and Kingsbury, and after a vote of thanks to the Board was passed by the audience, remarks were made by citizens Haywood, Holton and Weeks, when the meeting adjourned.

THE BOARD AT PLYMOUTH.

It was not expected that great interest would be manifested at Plymouth. Though there are good farmers in that vicinity, they are not accustomed to attend meetings of this kind and do not care to attend. A session was held in the afternoon and another in the evening. Mr. Burrows, who showed the Board many courtesies, called the meeting to order and introduced as the Chairman Dr. Mason of Moultonborough, the member from Carroll County.

The Secretary explained the work of the Board, and addressed the meeting on the importance of associations for the advancement of agricultural interests, and urged that the farmer make his occupation a study.

THE FARMER'S POSITION.

Col. Clough followed in a defence of the farmer and in the necessity for the cultivator of the soil to take a bold stand for his rights and for position in society.

He thought the cost of labor this year, and the loss of time by rainy days, was an injury to the farmer. Crops were generally good, but they cost more than in some other years and would not sell so high. The burden of taxes was great on the farmer, because his property cannot be kept away from the appraiser. Help was more expensive than formerly, and laborers did less work.

He advised farmers to employ oxen in their farm work rather than horses, for the reason that horses are liable to accident, and when worn out are of no use, while oxen may be made valuable for beef. He urged the culture of corn as the safest crop in good soils. He maintained that the character of the soil should be kept up by manures and stimulants. We can cheat our neighbors if we will, but we cannot cheat the farm.

Mr. Kidder occupied a little time in a line of remarks similar to that employed at Lancaster, regarding the law of compensation.

Col. Towle of Meredith followed, and argued that the farmer's prospects were discouraging under the present high price of labor, the exhaustion from cropping, the cheat in fertilizers, the cost of marketing, taxes, etc. The question has been raised, "What per cent. does capital invested in labor pay?" It don't pay a per cent. says Col. Towle. It barely preserves the capital, too often reduces it. We must devise a way of keeping up our farms. Will grass pay? Let us take that. We can't grow corn, unless the pork of swine will pay for the corn they eat. If so the problem is solved, for with them we can grow corn and save a loss of fertility. Dairying would pay if we had good house help, but we can't get it. Sheep and young cattle sometimes pay, not always. We must employ less hand labor, buy fertilizers that we know are good, and not more than one half are good. He related experiments that he had tried, at some length.

He closed with the remark that he didn't blame the boys for leaving the farm, however hard it was to let them go. The reason was no money was made in it. Show the boy how to make money, and he will stay on the farm. Show him how to make the farm pay and there would be no need of other inducements.

Mr. Lawrence followed, deprecating the tone of Col. Towle's remarks. He thought if any one should look upon the paternal acres which the Colonel tilled, his large barns and his magnificent mansion house, look upon his flocks and herds, they would not believe their owner to be in earnest when he talked about the hard time for farmers.

Mr. Lawrence then went on to tell how he had made money in farming, especially in the hay crop.

After brief remarks by others, the afternoon session closed.

EVENING SESSION.

In the evening session Mr. Lawrence presided, and Dr. Mason occupied the first hour in a studied and excellent address on the relations of chemistry to successful farming. It will be found among the addresses published in this volume.

DISCUSSION.

Mr. Charles Lord said it is often suggested we ought always of necessity to supply the immediate substance of plant food to our soil. Certain phenomena in nature would seem to contradict this. Nature supplies elements without the ordinary means. There is no lime in the egg, out of which a chicken with lime in the bones is hatched. The cellular tissue of the body is gelatinous in its structure, yet there is no gelatin in the blood from which it is formed. The people of Holland restored their poor lands without any manure, by simply plowing in crops. Boussingault found a large amount of carbonic acid in a plant grown in silicious sand and azotite of potash; where did the plant derive it? Plants grow in abundance, when farmers cannot grow them successfully, if the soil is let alone. We should study nature in the light of her own processes.

Rev. Mr. Hardy expressed pleasure in being present at these meetings. He thought it the duty of people in Plymouth to form a local farmers' club. He would like to see more inducements for the young in our State to stay at home.

Joseph Burrows, Esq., was struck with the interesting nature of the address of Dr. Mason. We ought to have more science in our farming. He spoke of the later desolation of our old farms. For the young it is easier to follow farming intelligently than to pursue the professions. He did not advise New Hampshire farmers to be wholly special in their tilling.

Mr. T. J. Sanborn, a working farmer of Campton who had sufficient interest to come from his town to the meeting, said,

For the first time in our history the last census shows a decrease in our population compared with previous decades. This is to be regretted in some respects, in others not. It is known and read of all that many farms in our back towns are being abandoned. This is as it should be; they are unfit for the abode of the industrious, they should be abandoned for more congenial localities. But why leave the State? We have abundant water power; if improved in various manufactures all of our population and more

too would find remunerative employment. Let the back farms grow up to wood, and in a short time their value will be doubled and trebled by the increased demand for fuel. There are thousands of acres of swamp land that could be drained and made to produce good crops of hay for all time, and this in time helps manure the upland. The custom of sending money from the State to other States for deposit in savings banks is an injury to the State, we lose the taxes thereon and the use of the money in our own State which should be used in developing our own resources. The practice of getting all our agricultural information from other States should be abandoned. We have a good agricultural paper in the State and let that first be patronized and made still better and then go to other States for more papers if wanted.

In conclusion let all, both the State legislature and each individual, do all in its power to promote our general prosperity, to the promotion of education, temperance and sound morals, and it will be proved that New Hampshire is not only a good State to emigrate from but also a good one to emigrate to.

Col. Clough spoke of the importance of practical work, and suggested that the chemistry and geology of the speaker would not produce good crops without practical knowledge, and went on to show the inability of science to make farming successful.

This called up Mr. Lawrence, who expressed the thought that condemnation of scientific studies came with an ill grace from a trustee of the only scientific institution designed especially for the benefit of the farmer.

The Colonel explained that he wanted both science and practice, which he said the institution of which he had the honor to be a trustee would freely furnish to every one who consented to its discipline.

Mr. Kidder closed the deliberations with a most animated speech. He declaimed forcibly against the idea that labor is not respectable, and insisted that the farmer with his hard hand and brawny aspect is as much entitled to our regard as any one. The impulse we need is a better education of the young. Abolish our present district arrangement of schools, and equalize the chances of every child in the town. Stick to New England; we have more comforts here.

Remarks were made by Messrs. Adams, Lawrence and others, and at a late hour the meeting adjourned.

THE BOARD AT DEERFIELD.

On the 12th of December the Board was represented at Deerfield, by Messrs. Roberts, Lawrence and Adams, accompanied by Mr. Kidder of Manchester, a volunteer in the service.

STATISTICS OF THE TOWN.

Deerfield is one of the most productive farming towns in the State. It has a large area of improved lands, and notwithstanding its hilly surface, its frequent boulders and its hard soil, yields a good annual harvest.

The census reports give the town twenty-two thousand acres of improved land, more than any other town in the large county of Rockingham. The estimated value of its live stock is one hundred and twenty-two thousand dollars. It grows annually three thousand bushels of wheat, ten thousand of corn, three thousand of oats, twenty-five thousand of potatoes, three thousand pounds of wool, twelve thousand dollars in orchard products, four thousand tons of hay, and butter and cheese and other farm products in great abundance.

There has been in the town the usual complaint of scarcity of good labor, lack of farm interest among the young men, a depreciation of real estate, a falling off in pasturage and a tendency to a general decline in agriculture. This is more imaginary than real, as is shown by the products of the soil. Yet there is reason for the Deerfield farmers to anticipate a deficiency in the future, unless measures be taken to employ more intelligent labor and engage in the growing of compensating crops.

With the view of creating new interest, the Deerfield farmers arranged for a meeting of the Board. Mr. Lawrence, the member from Rockingham County, presided, and made an introductory explanation of the object of the Board in holding meetings in various sections of the State, and then introduced Judge Roberts of Strafford County, who read a paper on

THE RENOVATION OF PASTURES.

In brief, Judge Roberts's plan of restoring pastures to their former productiveness was to add from time to time new areas to old pastures, destroy the bushes, especially the juniper, cut off all evergreen or dark-leaved trees, plow and re-seed when practicable,

top-dress with articles that will restore elements taken from the soil. Has been successful in plowing in August and September and putting in rye and grass seed which will afford feed the coming spring quite early. The Judge gave the result of experiments, and gave his practice in regard to the kinds of grass for pasturage. He desired a greater variety than for mowing, that there might be a succession of growth. He would take red clover and red-top, as the leading varieties, and was friendly to orchard grass and Kentucky blue grass. He closed with an expression of regret that farmers were compelled to feel discouraged, that young men sought the cities and fled to the West.

A DISCUSSION.

Mr. Lawrence followed in a few words, calling on the farmers to give their experience in pasture management.

Dea. Stevens said the question came up naturally when they referred to any improvement, "Will it pay?" Can we employ men at present prices and reclaim our old pastures? They cannot be plowed on account of rocks; we cannot turn the soil; we cannot get ashes enough. What can we do?

The Secretary of the Board occupied a little time, urging that these rough lands should be allowed to grow up to wood; that additions should be made to pastures from the field and from new cleared land; that there should be less area plowed and hoed, and more mowed; that, in a system of rotation, pasturage should be included; that bone dust should be applied as a top-dressing; suggested a division of pasturage so that stock could have fresh feed from time to time; that we feed too close and too early in the spring. He then responded to the question, "Will it pay?" and showed that the same question might be raised regarding other farm improvements. He said it *won't* pay to stand still and do nothing. We are made to work, and, pay or not, we *must* work. But it *will* pay, and farmers will find it so when they faithfully execute their work.

J. W. James of Deerfield said many of the suggestions made were not practical in their application to the hilly pastures of Deerfield. They could not be plowed, unless by a fifty-goat power with some sort of a snake-head for a plow. Why, said he, it would jerk a man's soul out of him to hold a plow among these rocks. He hoped somebody would tell them what to do and they would do it. He knew elements had been taken from the soil,

and now will sulphuric acid and phosphates and guano restore them?

THE SECRETARY — Use bone dust; that will restore elements carried away in milk and animal bones.

MR. JAMES — Yes, that will be one thing. But we need more. There is much wild grass coming in, and we don't get so good mutton nor make so much butter from the pastures as we ought.

The Secretary suggested drainage to a certain extent when rocks were not too large and too thick.

Mr. James gave his method of killing the juniper. It was to take a sledge hammer on a cold day and beat them down. They would not sprout again, but would spring up from seed. It was therefore necessary to burn around the bushes to kill the seeds. He didn't believe in burning over the ground except close to the bushes.

Mr. Lawrence remarked that if they could not restore what was lost, they could be more guarded in the future. We might do something to remedy the existing evil and much to prevent a worse condition. He believed in burning over the pasture early in the spring, provided there was substance enough to make a mere flash. After such a burn, fresh grass would quickly start up and better feed would be found for many weeks. We cannot expect to sell stock year by year and not exhaust the soil. We must replace in part what we remove. He referred to the effect of different kinds of stock on pasture ground. Sheep kept the ground in good condition, while neat-stock impoverished it.

Rev. Mr. Patten of Deerfield was called on, and made an eloquent and appropriate off-hand speech relating to early incidents in his own history, his boyhood experience on the farm, the necessity of labor, the importance of the farm in its influence on the health and character of young men. He commended the young men of Deerfield who remained at home, strove to be intelligent and were ready to sustain the institutions which made our country worthy of respect. Mr. Patten's remarks were received with loud applause.

The meeting at this point adjourned for dinner.

AFTERNOON.

The subject of pastures was resumed for a half-hour.

Mr. Cate of Northwood and Mr. Abbott of Raymond, and several other gentlemen engaged in a discussion of the subject.

On hearing the remark that boys who went to the city often came back and exerted an undue influence on old associates, Judge Roberts made a representation of the superiority of the young man on the farm to him who seeks the city, and appealed earnestly and eloquently for all who have work to do to abide by the farm.

Mr. Abbott of Raymond thought nature would renovate our pastures if we only let them alone. Our hill farms are surely running down; our boys find that shoemaking pays better. We ought to save our ashes, and give more attention to sink drains.

Judge Roberts made an extemporaneous speech of great force and beauty. He thoroughly vindicated his views on renovating pasture lands, and waxed eloquent over our New England privileges. Young man, he said, stick to New Hampshire and the farm. Farm life is better than city life. It may not have the riches and the luxuries; neither has it the vices that ruin such multitudes.

THE POTATO DISCUSSION.

The Secretary read a paper on the history, constitution and culture of the common potato.

Discussions arose on the manner of seeding and on the cause of the rot, in which Messrs. Roberts, Adams, Kidder, James, Chase, Stevens and others participated. It was generally agreed that only sound, fair-sized seed should be used, and that a good section at least of the potato should be planted with the eye. Some preferred whole potatoes, but no one advocated planting merely the eye, or very small sections.

The question regarding the rot was whether it is caused by an insect or is a fungus growth. It was stated that a microscope had aided in discovering that a minute insect was deposited in the tuber and that it was transferred to the new potato in a natural course of reproduction. The Secretary stated that an English writer had experimented by *greening* the seed in the air before planting, which probably was done with the view to kill the insect. The Secretary did not have faith in the theory, for if it was an insect the destruction of the tops would not be so uniform as it appeared to be. When it was first discovered a smell is perceived from the field and soon the leaves on one side droop and perish and immediately the adjacent hills follow with the same signs until the field, or all of it under similar conditions of soil, seed and culture, give the same appearance. If it was an insect that

caused it, there is a probability that decay would be discovered in spots all over the field.

The general conclusion of the meeting was that certain atmospheric influences at a particular period in the advancement of the crop tended to develop the disease, and that it would not appear unless these atmospheric agencies existed at that especial condition of the crop.

EVENING SESSION.

In the evening a good number of hearers, including some ladies, appeared.

Judge Roberts presided, and on taking the chair expressed his pleasure in hearing the announcement for a meeting of the old Deerfield farmers' club. He urged the people to sustain such meetings.

Mr. Lawrence then gave an address on the subject of

MANURES.

At the close of the lecture a discussion of points named was invited.

Mr. Chase, a progressive farmer, referred to the use of plaster as a fertilizer, and gave his testimony in favor of its use. He knew potato crops had been increased one-third by its application.

A discussion was maintained between Mr. Lawrence and Mr. Stevens regarding nitrogenous manure, in which Mr. Stevens explained its effects in his practice. He considered it as immediately serviceable, but of little lasting benefit.

Mr. James took issue with Mr. Lawrence on the value of pine leaves as a fertilizer. He regarded them as most other people do, as fatal to vegetation. Mr. Lawrence explained that he so understood it when they were left on the ground, but in decomposition in the compost heap it was a different thing, and he gave authorities in support of the position.

THANKS EXPRESSED.

The evening having been fully occupied until past nine o'clock, Mr. Lawrence expressed the satisfaction which the members of the Board had received by the attention which had been given. Judge Roberts also expressed similar gratification.

The following resolution of thanks to the Board for the interest they had created was presented by Rev. Mr. Patten in a few words

of commendation, which was unanimously passed, and the meeting adjourned :

Resolved, That the citizens and farmers of Deerfield gratefully and respectfully acknowledge the efficiency of the State Commissioners, and those with them, in their scientific essays, their intelligent remarks, and their courteous, gentlemanly and interesting management of the meetings of this day.

Samples of corn and other grain were exhibited at the meeting.

THE BOARD AT GILMANTON.

On the morning of December 17, a delegation from the Board, including Messrs. Humphrey, Adams and Lawrence, met the farmers of Belknap County at Gilmanton Iron Works. They were accompanied by Col. Clough of Canterbury and Mr. S. C. Pattee of Warner.

MR. COGSWELL'S WELCOME.

The meeting was called to order by Capt. Thomas Cogswell, member of the Board from Belknap County, who resides at that place. He explained the work in which they were engaged, and spoke of the importance of public meetings of farmers, in imitation of men in other occupations. He believed a new era was soon to dawn on the farmer; he is to be more independent, to manage his business more systematically and more successfully. The farmer is too apt to think that he is of no consequence, is influenced by professional men, but he is now beginning to feel that he has the power and he means to exercise it for good.

The speaker referred to the return to his town of men who had years before left to better their condition, but now preferred the scenes of their early life. He expressed his determination to remain in the old town, on the farm, and to fight it out on that line.

Mr. Humphrey, on taking the chair, made a statement regarding the labors in which the Board had engaged, and proposed, as but few were present at the opening, that a little time be spent in a general discussion.

Col. Clough, who formerly lived in Gilmanton, made a short talk, and expressed the opinion that farming in our State had

seen its "dark age;" that the prospect was more cheering; that the Western fever had abated, and boys and girls had begun to think of remaining on the farm. We must improve our farms and look out for our own interest in the management of public affairs.

WHEAT GROWING.

The Chairman called up Mr. S. C. Pattee of Warner to relate his success in wheat growing. He gave in brief his system of culture as reported last year in our second volume.

The Chairman expressed the opinion that farmers generally could grow their own wheat; not, of course, enough for the consumption of the State, but for the farmer's home use.

Mr. Hatch, an old gentleman of more than threescore and ten years, said he had farmed all his life, and never bought but one barrel of flour; he had three acres of wheat and generally got twenty bushels to the acre.

At the opening of the afternoon session, the hall was well filled with substantial farmers. The first exercise was the reading of a paper by Mr. Humphrey on

FAIRS AND THEIR MANAGEMENT.

He gave briefly their history, referred to the duties of judges, recommended making entries in advance, condemned the general free-ticket system, named the objects of fairs and showed the demoralizing influences of racing for the gratification of the people. He believed in offering prizes for trotting, but thought they should compare in amount with those offered for pulling and the kinds of labor required of oxen. He took the ground that fast horses and the patronage bestowed on them led to betting, cheating and a variety of tricks. The practice of racing at fairs led the attention away from worthy objects, created a feverish desire in young minds to hold the reins over fast horses, and this had a baneful influence on them. He referred to many other objections to trotting for large purses at fairs. He favored the use of tracks for exercise and exhibition of horses, and when unconnected with fairs was not unfriendly to trotting.

Col. Clough expressed his concurrence with the remarks of the speaker, and James W. Cogswell took a position on the opposite side. Dr. Gray, a horseman not unknown to fame in that section of the State, took the floor in opposition, and made an earnest

defence of the race course, even at fairs. Mr. Humphrey defended the position he had taken, and said his object was not to interfere with fairs, but to do something to divorce horse trots and cattle shows, for the good of the farmer.

Rev. Dr. Blake and Rev. Mr. Durgin sustained the course proposed by the speaker. Others coincided and the audience insisted on giving an expression of the approbation by a large affirmative vote.

Mr. Lawrence took the ground that if horsemen controlled the fairs, it was because they were smart, while the farmers were timid and would not assert their rights. He thought too much was paid for horses in comparison with that given for oxen and other stock. He held to county and local fairs, as less expensive than those on a large scale, but suggested more social features at fairs and on the farm, and expressed the hope that farmers would adopt the plan of holding meetings at their houses for the sake of comparing crops and enjoying a social hour. He believed in liberal amusements for farmers and the young folks on the farm.

The subject was here dropped, and Mr. S. C. Pattee of Warner read a paper on the subject of

MANURES.

He laid down three principles regarding the soil, not new, but very true; First, Drainage; second, Clean Culture; third, The Restoration to the Soil of Elements Removed by Cropping.

He dwelt somewhat on each point, insisting on drainage and clean culture, and then showed how manures should be managed and applied. He gave no especially new facts regarding manures, but in a plain way repeated practices that have been approved by his own experiments. Cultivated land, like stock, should be well fed. Manure from stalled animals is worth more than the excrements of a milch cow or working or growing creature. Good hay affords better manurial prospects than poor. One thousand pounds of manure gives eight hundred of dry matter. The same quantity from hay and potatoes gives eighty of dry matter, of which eight are nitrogen and twenty potash, etc., with the whole analysis. The first important element of manure to the growing crop is the nitrogen, it starts the blade; the next is the phosphoric acid, it assists in the formation of the seed. Lime, humus, magnesia and silex are generally distributed and easily obtained. Care should be taken that manure should not putrify before

applying, the gases escape, and "greenbacks fly away." The man who fails to save the urine of the stock is like the miner who refuses the crude ore because it is rough. He stables his stock both summer and winter; throws his manure into the cellar, where it is worked over by hogs; the process prevents putrefication until it takes place in the soil. He thinks one load fresh is equal to two of rotted manure. A farmer should know that clover demands gypsum; potatoes, potash; corn and wheat, potash and phosphates. He showed the constituents of bone to involve the gelatinous or nitrogenous matter, as well as the lime and phosphates so useful to the growing plant, and recommended to reduce them by boiling with ashes. One hundred and sixty pounds of bone are worth two tons of straw. Mr. Pattee related many other points of theory and experience we cannot notice.

Mr. Jeremiah W. Sanborn of Gilmanton, since appointed a member of the Board in place of Capt. Cogswell, resigned, had tried phosphates and could see no advantage from them. He preferred to feed out hay and make stable manure. He grew clover for sheep and milch cows, and found it more economical than good market hay. It was more cheaply raised and was better fitted for sheep. The manure from it was nitrogenous and valuable. He thought grass the best crop, but he would not sell it unless it brought a given value which would enable him to replace it by plaster and other fertilizers. He composts liberally. He would not feed out corn that cost him seventy-five cents a bushel when he could buy for sixty.

Remarks were made by Mr. C. G. Kelley and others on this subject, when the meeting adjourned until 6 1-4 o'clock.

EVENING SESSION.

A large audience including many ladies assembled, filling the hall to its utmost.

The first hour was occupied in further consideration of the manure question. Mr. Lawrence read his paper on that subject and an earnest discussion followed. Mr. Lord, reporter for the *People*, told the story of the pear tree that invaded by its root the grave of Roger Williams and raised Rev. Mr. McCarty's query, who ate Roger Williams? This put the audience in good humor which was kept up through the debate.

Rev. Mr. Blake related experiments of the use of soap suds and the waste generally turned out of the back door.

Mr. Humphrey thought hogs could be kept profitably, and that they would restore old soil better than any other stock. Mr. Lawrence took the negative of the question.

Rev. Mr. Durgin, the "fighting parson," told jolly stories of the old man who kept hogs for their company, and related the experiences of Mr. Knights of Laconia in bringing up a farm by hog manure.

Col. Clough endorsed the hog theory, but took issue in the question of meadow hay which Mr. Lawrence had condemned. It is valuable and makes good manure.

J. W. Cogswell in part endorsed the doctrine. Mr. Lawrence opposed both the hog system of making manure and the meadow hay theory. Hogs wouldn't pay for their keeping and meadow hay makes a very poor manure.

Mr. Hayward and others carried on the discussion until eight o'clock when Mr. Adams, the Secretary, was called on and occupied an hour in giving his experience during a summer on English farms. As this was better adapted to a miscellaneous audience than subjects which preceded it, marked attention was given the speaker and frequent applause was manifested.

Mr. Lawrence expressed the great pleasure the Board had received in meeting so many of the farmers of the town.

A resolution of thanks to the Board and those who accompanied them was offered by James W. Cogswell and unanimously passed in the following words :

Resolved, That the thanks of this meeting be extended to the Board of Agriculture and other persons, who have kindly volunteered to attend and address the farmers of this town and vicinity on the subject of agriculture.

The meeting was in all respects successful and the Board was most cordially received by the people of Gilmanton and vicinity. Samples of farm products and especially fine apples were presented at the meeting.

THE BOARD AT ACWORTH.

Accepting an invitation from the farmers of Acworth, the Board of Agriculture held a meeting in that town on the 26th of December. Only three of the members, Messrs. Humphrey, Buffum and Adams, were present, but they were accompanied by Messrs. J. A. Wood and G. A. Comings, non-resident natives of

the town, and by Joseph B. Walker, Esq., of Concord. The majority of the party reached the location in a morning sleigh-ride of fifteen miles, from Newport.

ACWORTH AND VICINITY.

The route was by the Unity Springs, through a section of good farms and evident rural thrift. Though snow covered the earth and concealed the nature of the soil, the frequent commodious and newly-painted dwellings, the large and well-made barns, and the specimens of excellent animals occasionally seen, furnished abundant evidence that in one section, at least, farming pays.

Acworth is not so much among the hills as upon them, commanding a broad view of a country of surpassing attraction. It is reckoned among the decaying towns, and needs a railroad to restore it to its former glory. Its young men do not love its rocky soil and its hilly surface, and seek other homes and other fields of labor. It has been a good fruit town, but in the section through which we passed old orchards are passing away, while new ones have not always been planted in their places. Sheep were once kept within its limits in great numbers, for whose support the hilly pastures seem well adapted. But the flocks are reduced to less than half their former numbers. Neat stock is the chief reliance — oxen for the yoke and the shambles, and cows for milk that finds a ready market made into butter and cheese. Grass is profitable mainly through its home consumption. Maple sugar is an important product, and contributes greatly to the income of the producer. More of this article is made in Acworth than in any other town in the State.

The meeting was held in the Town Hall at the Centre. The inclemency of the weather, the mercury below zero, and at 24° below on the preceding day, prevented a large attendance at the first session, but the afternoon brought a well filled hall.

NEAT STOCK DISCUSSION.

After a few words of explanation by the Chairman the subject of neat stock was presented, S. W. Buffum of Winchester occupying the floor. He discussed the question of breeding pure-bloods, with ability, being thoroughly familiar with the subject and from practical experience in the breeding of Short-Horns. His remarks were the same in substance as those made at Colebrook and Lancaster, reported in previous chapters of our report.

He was followed by the Secretary in remarks regarding the importance of a correct pedigree of blood stock; in defence of the Devon blood, nor flatteringly of Ayrshire as working cattle or as milch cows, and on special milking strains of Short-Horn stock.

Remarks were made and questions asked regarding Short-Horn blood, and the various families known in the State, Mr. Buffum answering very fully.

Mr. Walker of Concord followed in an account of the graded stock at the Asylum farm, and in defence of pure bloods, especially the Short-Horns.

AFTERNOON SESSION.

In the afternoon a large audience was present.

Mr. Humphrey occupied the first half-hour in repeating his paper on "Management of Fairs," which was not discussed.

PLOWING.

Mr. Walker followed in an able paper on "Plowing," which he illustrated with numerous diagrams and plates. He gave an account of the formation of soils, and spoke of the necessity that they be plowed. Plowing opens the soil, lets in air, moisture and heat. It answers in a small degree the purpose of drainage. It buries manure, inverts and enriches the soil, and intermixes them.

He referred to the practice of early plowing, and described and showed by illustrations the plows of other times. Gave Jefferson the credit of presenting the first principles on which a plow should be constructed. They are in combination, one to lift and one to turn the sod. A plow should do four things, and its construction should have these in view — to cut, to lift, to turn and to pulverize the soil. It should be constructed to save as much draft as possible and not be too much of a drag on the team. Generally fifteen per cent. of the force for plowing is needed to draw the plow on the surface.

Plows may turn good furrows without pulverization, and without really stirring the soil. The mould-board is not always sufficiently convex. A peculiar twist must be given to the furrow to make it turn and pulverize; a plow should be almost capable of holding itself, or swimming in the furrow; it should be thoroughly made, and have an evenness of wear, and all possible friction prevented.

The speaker explained by diagrams how to plow; preferred the lap furrow system to the flat, as it exposed more surface to the action of the atmosphere. He believed in fall plowing, not when too wet or too dry, and on such soil as he cultivated to plow deep — nine inches or more. There is much in attaching the team rightly and in having an even yoke.

He explained how "lands" are usually struck out, and the plowing done so as to tread down by the teams a large portion of that which has been plowed; advocated turning back furrows and leaving few or no dead furrows.

He insisted on thoroughness, and closed by showing that the plow is not only the symbol of success, but the real agency by which success must come to the former. [This paper is given in full in the coming pages of the volume.]

A little time was taken up in a discussion of the subject, when the Secretary read his paper on "Potato Culture." This was briefly discussed, when the audience, indicating a desire to leave, an expression of thanks for a liberal attendance and close attention was made by the Secretary, and, on motion of Mr. Dickey, the thanks of the meeting were given to the Board for their efforts. Specimens of Swedish oats were shown at the meeting.

It was arranged that members of the Board should go to South Acworth and hold a meeting with the Farmers' Club, but it was now after four o'clock, and a fierce storm was beating, threatening to block the roads, and it was thought injudicious to hold another final session. Most of the party enjoyed the luxury of an evening ride to Newport, facing one of the severest storms of the season. But Mr. Buffum addressed a small meeting at South Acworth, on "Neat stock," and Mr. Cummings of Concord spoke of the advantages of remaining at the old homestead.

THE BOARD AT NEW LONDON.

A year ago a meeting of the Board was advertised at New London, but a storm interfered and no member had the courage to meet his appointment. It was the firm resolution this year of those who left Acworth on the evening of the 26th to fulfil their engagements in that hilly town though snows be piled to the house tops.

THROUGH DEEP SNOW.

With a pair of horses and an experienced driver, we drove out from Newport, through Sunapee Harbor and along the lake, by George's Mills and "Goose Hole," over the line that separates Sullivan from Merrimack County. At first were untrodden roads, then deep snows and frequent drifts which were not easily surmounted. A journey of nearly five hours brought us, after frequent use of the shovel and much experience in tramping a path for the leg-weary horses, to New London's wind-swept street. Nearly a half-mile of solid snow-bank then lay between us and our destined rest. But at length drifts and winds and biting cold were all withstood, and we found ourselves by the protecting fire of a semi-hotel, at a hospitable farm-house. A portion of the party that sought different conveyance and another route were snow-bound and failed to appear.

The Town Hall was in readiness, and after dinner a company of about fifty farmers gave us a cordial welcome.

ADVANCE IN FARMING.

Without delay, Mr. Walker of Concord delivered a brief address on "Advance in Farming." He began by referring to the apparent decline in farming and to the constant complaint of farmers that they cannot live on the farm. Like the potentate of olden time, we dream of death, and are disposed to perform our own obsequies.

He then showed that though some farms are abandoned and many are neglected, a great advancement had been made, that we tilled better, had better prices for our products, had more comfortable dwellings, improved barns, and were far more prosperous than farmers of a half-century ago. But he argued we need a new spirit of enterprise, more enthusiasm, more thorough tillage and more mental culture.

To be more definite, he took the ground, first, that we must work more on a settled plan, like the mechanic and the merchant. We must keep up with the times, as do men in other occupations.

He next considered the labor question, and showed that, though it was scarce and not educated in many cases, it was saved by machinery, which was now so nearly perfected as to save much manual toil. We must adapt our crops to our soil, our market and other circumstances.

Plowing was another matter that demanded more attention,—we must cultivate deep and more perfectly.

The subject of saving manures was next considered.

Domestic animals must be of superior blood, and instead of mongrels and nondescripts, we must raise grades for profit.

He dwelt largely on drainage and urged its importance earnestly.

We must preserve our woodlands, and take such care of them as will make them more valuable.

We must increase the producing power of the 'soil in every possible way to save expense and preserve the fertility of the soil.

PASTURES.

The Secretary occupied a half-hour in a discussion of the pasture question—the manner of renovating them. He dwelt on the points named by Judge Roberts and himself at the Deerfield meeting, which were briefly stated in a former number.

An interesting discussion followed, in which Gen. McCutchen of New London took the ground that though many of the suggestions made were applicable generally, they failed to hit the case of New London farmers. He did not think we could plow deep, nor successfully drain much of the land, nor could they do much with wood or market gardening. The trouble is the farmers are poor and haven't the ability to begin. Theory was all right, but observation enabled men to make the proper practice.

Several other gentlemen spoke, some with ability, indicating that the farmers of that town do their own thinking and possess a spirit of independence that will make them successful.

The Secretary appealed to the meeting to keep up the farmer's club, to engage in discussions, to read the agricultural press, and contribute their share to make our State worthy of the good name she bears.

THE BOARD AT DOVER.

Whenever the Board have made a visit to country villages or rural sections remote from railroads there have been a large attendance and spirited meetings. But in cities the reverse has usually been expected and fully realized. The same proved true especially at Dover, on Tuesday, the 31st of December, where

unusual notice had been given in the papers and by circulars. A promise was made that a large audience would be afforded in case a meeting was arranged. The result was not a disappointment to the Board, but proved their own predictions that the gathering would be small and destitute of interest, and so it was at the opening. In the morning session there were less than fifty hearers, and not twice as many in the afternoon, nor a great increase in the evening. The day was rough and cold and stormy, but not worse than days when in country towns three hundred gentlemen and fifty or a hundred ladies came out.

PASTURES AGAIN.

The meeting was opened at half-past ten. Judge Roberts presided and made brief and pertinent remarks at the opening. He said the members of the Board came not so much to instruct, as to awaken thought and arouse the farmers to a consideration of their own interests. He then for a time discussed the pasture question, not in a written paper, but in a familiar and practical way, embracing some of the points to which we have previously alluded.

Col. Clough followed and argued that farmers should look after their work as closely as do manufacturers, and that no branch should be overlooked. Pasture renovation is one of the matters of great importance, and the suggestions made he thought appropriate, but how can we do it? We want labor, and must have it. But how can we get it when it is not to be had, so long as mechanics and manufacturers pay more than we can pay? We want capital. There is need of capital on most farms, and we shall not be successful without it.

We must grow what brings the best compensation in the market, economize, and adapt ourselves to the circumstances around us.

Mr. Steele of Dover, an aged gentleman, took the ground that though plowing might benefit the soil for a time, each time it was required the soil was on a lower plane, and that its character could not be kept up to its original fertility, even though its entire product be returned to it. Ashes could not permanently improve the soil. He could see no hope for the farmer. He could not live in New Hampshire. He must leave the farm.

Col. Clough said a man who could not at *the same time till and recuperate his soil* is not fit to be called a farmer; it can be done

by feeding hay to stock, and applying the manure. If he hadn't improved his farm ere this, he would have been on the town.

Strange idea, said Judge Roberts, if we cannot improve our land by plowing! What is to become of the world? How poor China and India must be, where tilling has been practiced so long. Who does not know that plowing improves the land? See the luxuriant weeds, grass and shrubs on the fresh earth brought up by our railroads. All land is valuable for some purpose, and susceptible of improvement.

Mr. Walker didn't believe the Almighty designed the world to wear out in our day. We have been tilling for two hundred and fifty years, as has China for ten thousand. The land still holds out. It will do its duty if we do ours. The great mass of the people have and do live by farming. Thus he continued, showing how New England people are the sharpest, the result of our peculiar incitements to labor; asserted the redemptibility even of Sahara, and told how Scotch lands were restored by simply setting out the larch, which nourished by its deciduous leaves.

AFTERNOON.

After general remarks by Dr. Stackpole, the Chairman introduced Mr. Walker of Concord, who repeated his address on "Advancement in farming," which we have already reported in brief.

Mr. J. G. Guppy of Dover took the ground that the young men who left the farm had generally done better in business than those who remained; that farms had not become impoverished much; that native cattle are the best; that drainage was often a failure; that shallow plowing was good enough; that farmers can't compost because labor is too high; that in fact we grow too much, more than we can sell or use up.

This seemed rather strange doctrine for a successful farmer, and it came out that it was not in accordance with the speaker's practice. He was talking against himself for the joke of it!

Mr. Steele repeated his heresy about the decay of farming, when Col. Clough arose and demonstrated that he had made money by farming and at the same time improved his farm. He took occasion, in response to an attack on the Agricultural College, to make a spirited and noble defence of that institution.

Mr. Walker replied to Mr. Guppy and Mr. Steele, and pointed out some of the errors they had advocated.

Mr. Lord of Great Falls regretted the disposition to cry down farming, and in a few words showed that farming would pay.

Mr. Joseph Kidder of Manchester manfully combated the idea that farming would not pay when rightly managed. There is too much skinning the land, and too little good culture. He showed the necessity of the law of "compensation," argued that farmers attempted to cultivate too much land, that special farming is best, and urged farmers to greater exercise of their mental powers to ensure success.

EVENING.

The Secretary presented once more the potato question, which was ably discussed. Mr. John D. Lyman said a reason why we do not find good potatoes at the hotels is, the farmers do not realize the profit to be gained from raising the best. For potatoes on gravelly soil, he would plant the seed three or four inches deep, but on hard soil would plant higher and dig the soil over it; would not harrow ground before planting, but would plow & harrow, drop the seed, and plow back again; if the land was rough, would harrow just as the potato was coming up; would plow the crop out in the fall. He advised farmers not to labor too much with the hoe, when the work could be done cheaper by other means, and to experiment with manures, if they would arrive at facts, urged the importance of selecting only the best seed. Mr. Lord mentioned the duck fowl as a sure enemy of the Colorado bug, and suggested if the farmers use their resources by this means they might take a turn in the poultry business. Dr. Stackpole mentioned the pulverized white bellflower as a remedy for this potato pest. Col. Clough and Secretary Adams mentioned interesting facts in the history of the potato crop in our country. Mr. Walker spoke of the errors of using manure too much and too late in manure for this crop. Mr. Lawrence, of his exhaustive manner, Mr. Kidder, of the importance of trying more than one experiment before yielding a point in agriculture, and Judge Roberts advised not to plant potatoes too thickly, and claimed their less liability to rot if the weeds are kept down.

THE BOARD AT WOLFEBOROUGH.

Wolfeborough, by its situation in summer, has not been regarded as a desirable winter resort, either for pleasure or business. On the borders of the Lake it is visited by cold and stormy winds, and even by fogs which prevent an enjoyable sojourn for the traveller. The opening of a railway for traffic between Walsfield and Cambridge afforded a convenient departure from the Great Falls and Conway River, and gave easy access to the beautiful village of Wolfeborough Bridge. As there is a good agricultural town, the Board selected it as the location of a meeting for General County and invited the farmers of the county to assemble there on the first of January.

Dr. Mann, the member from the county, was in the ground at the appointed hour, and Messrs. Adams and Lawrence were delayed on their journey in their arrival from Dorset by the tardiness of the train. The speakers were welcomed by Hon. A. H. Hunt and a respectable number of gentlemen of the county.

FIRST EXERCISES.

The first exercise was a discussion of the pasture question, which was taken up by Mr. Adams, who occupied a half-hour in presenting some of the methods worthy of trial to effect a restoration of pasturage. He advocated the consignment of much pasture land in the hands of small agriculturists, growing various kinds of crops; pasturage is included, a division of pasture at that time may be allowed for growing the bone-meal, wheat and clover, the grazing the keeping of sheep, cutting of bushes, etc.

Mr. Nisbet of Tottonborough had tried many ways, and he approved many the suggestions just made. He had even the trunks mowed and burned, and the result was a better crop at once; he had mowed them and carted them off, and had good results. He had practised the subdivision system, and had improved his grazing lands by the keeping of sheep.

Mr. B. M. Mason of Moultonborough had found sheep a restorer of pasture lands; they destroyed many wild grasses, but the sweet-fescue pulled out some of the wool. He couldn't grow his pastures, and sheep seemed to be the best restorer. He had kept fifty sheep; from thirty-nine he raised fifty-three lambs. His flock

realized him five hundred dollars income per year, which appeared to be equal to about thirty dollars a ton for his hay at the barn. He fed out a great amount of wild grass which grew on low land that sheep relished and grew hardy upon. He showed a sample which looks much like "gun-bright," but is evidently different.

Mr. Lawrence followed, and suggested that the dry seasons previous to that of 1872 had seriously affected the pastures, but the past season had begun a restoration. He had burned over portions of pastures slightly, early in spring, to a good purpose. He advocated the sheep theory, but believed in early shearing of sheep and keeping them housed for a time afterwards. He further advocated plowing, dressing, taking off a crop of potatoes, sowing plaster, bones, etc.

Dr. Mason said that Nature would do much to sustain herself even against all discouragements. There was a blessing in the drought which brought up fertility by capillary attraction, and then the rain penetrated thoroughly now that a wet season had come, and washed down richness to the roots of plants. He referred to the growing of birches in pastures and to the means of killing them.

Mr. C. Edgerly related his experience in killing birches by cutting about the last of June.

Mr. Moses Cate had not succeeded by cutting, but had done so by plowing after cutting, but that was too expensive.

Gen. Hersey didn't think pastures that could not be plowed could be much improved.

Mr. Lawrence suggested that the constant feeding of milch cows reduced the quality of the pastures by carrying off phosphoric acid and lime. It would be necessary to restore these constituents.

Mr. Charles A. Parker, editor of the *News*, said that the need of the farmer was a great amount of muscle at a cheap rate; labor is high and scarce. Enough of it will restore the pastures, but too many men regard labor as a curse instead of the greatest blessing. Or he might say that poverty was a greater blessing, because it compelled men to work.

EVENING.

People assembled at an early hour in large numbers, filling the large and handsome Town Hall. Many ladies were present. As considerable time had been lost in the day by the delay in open-

ing the meeting, the people desired that members of the Board should occupy the time, that they might have topics for consideration at future times.

PAPERS READ.

Accordingly Dr. Mason occupied the first hour in a studied and valuable lecture on agricultural chemistry as applicable to our own farms. This commanded earnest attention as did Mr. Lawrence's paper on "Manures" and the Secretary's on "Potato Culture."

A DISCUSSION.

It was past nine o'clock when the last speaker concluded his remarks, but the people were not anxious to leave, and another hour was occupied, first in a discussion of points in the paper on "Manures," which, in brief, led to the conclusion that farmers might save much fertilizing material now wasted; that the better animals are fed the more effective the resulting manures; that a mixture of the various kinds of manures was advisable; that the application of muck, loam, plaster and vegetable matter generally is necessary; that even pine leaves in decomposition are of value, though they will in their natural state destroy vegetation; that while farmers ought to save all bones and put them into solution, they cannot expect to gain much by manufacturing phosphates, when they have to buy all the material except bones.

In regard to the potato question, it appeared that farmers had found it to be an exhausting crop; that if grown repeatedly on the same soil it would diminish its productiveness, and that constituents removed must be restored, if we expect success. It was generally conceded that the practice of planting very much below the surface was objectionable, and that when to destroy weeds hoeing was necessary after the blossoming, it should be only surface hoeing, without drawing more soil around the vines. By all means *maintain clean culture* was the united expression of the people.

After remarks by Mr. Rust, Mr. Haley, and other gentlemen, expressing their pleasure in the great success of the meeting, and reciprocating friendly words by members of the Board, the meeting adjourned at ten o'clock.

THE BOARD AT HAMPTON.

On Thursday, January 2, the Board met with the farmers of Hampton and vicinity.

MISCELLANY.

The morning session was conducted by Judge Roberts, the member from Strafford county, Messrs. Lawrence and Adams not arriving from Wolfeborough in season to take a part. Mr. French of North Hampton occupied a portion of the time in a written paper on the "Present and Future of Farming," in which he presented an outline of his own successful farming.

A discussion followed, in which Judge Roberts, Rev. Mr. Lyford and others participated. As the Secretary could not be present at the opening, he omits further mention of the morning exercises.

AFTERNOON.

In the afternoon a good number assembled, and after the reading of the Secretary's paper on the "Culture of the Potato," a spirited discussion was maintained. Mr. Lamprey goes for planting deep—six inches below the surface, rather than two inches. It would stand the drought better, but he said nothing about excessive moisture.

Mr. Wm. H. Hunnewell of Exeter holds to cutting the seed, plants close, uses plaster and saltpetre, and his crop does not rot. He suggested that a mulch might prevent the rot.

Mr. Uri Lamprey plants according to the soil, the weather, and other circumstances. He thought he found the Colorado potato bug on his potatoes last summer; carbolic acid would put them to flight, and he thought that better than Paris green. He regarded them as poisonous to poultry.

Mr. C. C. Lord had seen them and had known ducks to eat them and grow fat, and afterwards knew them to die a natural though violent death, and did not, *post mortem*, cause death to their consumers.

Mr. E. B. Philbrick of Rye approves shallow planting; thinks potatoes want a loose soil about them.

Hon. Warren Brown of Hampton Falls does not agree with all the doctrines of the Secretary. Rules cannot apply to all soils. The land about Hampton has been cropped too much, and cannot

be easily restored. Ashes don't do the work for him, nor do bones and plaster always ensure good crops. He had tried five kinds of superphosphates, side by side, and also other specials, but could see no marked benefit. He cuts the seed and don't change it, and thinks he is right in his practice.

Col. Weare of Seabrook said he had heard that Coos county produced five hundred bushels of potatoes to the acre. He had filled a barrel from twenty hills, on rather light, loamy land, dressed with coarse stable manure, and argued that the seaside lands had not become exhausted. They only needed culture and good dressing.

The discussion was continued for an hour, Rev. Mr. Lyford, Mr. Lamprey and others taking part.

PASTURE RENOVATION.

Judge Roberts read his essay on the "Renovation of Pastures," which was considerably discussed. The Hampton farmers have but little pasturage, their land not being well adapted to that purpose. They paid no attention to it, but either soiled their cows or "got along any way" for the summer.

Mr. French of North Hampton had given attention to pasture renovation. He trimmed up all the trees, cut up the junipers at the root, and put the ax to the root of all bushes. He portioned off a section of pasture, plowed in the fall, left the dead furrows as drains, harrowed and cleared off all superfluous material, and in the spring seeded down with oats. The result was all he expected. He continued in this way until much of his pasture was renovated. His cows brought a revenue in milk of ninety dollars per year each. He saved all manures, solids and liquids, tying up his stock at night in the summer as well as winter.

Mr. Stephen Brown of Kensington gave a detailed account of the reclaiming of several acres of wet, boggy pasture land by drainage, and subsequent plowing, manuring and cultivating, raising heavy crops and now getting an abundance of good feed.

EVENING.

Judge Roberts, on calling the meeting to order, made appropriate remarks regarding the position of the true farmer, and the dependence of all classes on him for support, and expressed his gratification at the large gathering of the fathers and mothers and

young people of the town. He then introduced Mr. Lawrence, who occupied nearly an hour in presenting the claims of the soil to all the fertilizing material that can be made on the farm.

SAVING MANURES.

Mr. Hunnewell agreed with the speaker in regard to the saving of manures. We can't buy, and must save or have none. He then asked, what is manure worth a cord? In Exeter it sells at eight dollars a cord, and in the Connecticut Valley tobacco lands it brings twenty dollars. But what can we afford to pay? Grass pays best. Many crops will not pay for manure, labor, interest and taxes.

Another speaker, whose name we did not note, said bones could not be dissolved readily; that ashes and water would not do it,—even willow ashes, which he said are the strongest.

At this point, Col. Weare introduced a resolution requesting the Board to use their efforts to secure the passage of a law requiring manufacturers to state in their labels the solid materials in their phosphates. This led to a sharp contest between Col. Weare and Mr. Lawrence, which at length assumed a personal character.

The Secretary remarked that it was the duty of the Board to keep the meeting within the proper limits indicated by the subject discussed, and that as the gentlemen had crossed swords and given mutual evidence of their pluck, he moved that the resolution lie on the table. The motion prevailed, and the discussion was renewed.

Mr. French had used all the fertilizers named, and regarded ashes as superior, taken for all purposes. The subject of the real value of manures was again named, and the Secretary said it was not easy to tell the exact value of manures. If experience was good for anything, the price farmers are willing to pay and the price they would take for their own manures should indicate the real value.

Warren Brown said probably no meeting just like this had been held in Hampton for many years, if ever. The land had been cultivated for two hundred years, and the soil had been reduced, but it still brought two hundred dollars per acre, and sometimes five hundred dollars. When the owner expected a harvest that would pay the interest, the manure and the labor, he was likely to be disappointed. Seaweed comes by chance, and is not sure. The

farmers must have more fodder, but how? Plaster does little good on that soil, and farmers are cheated in phosphates and cannot depend on them.

Mr. Uri Lamprey, who presented samples of gigantic corn and pop-corn, was called on to explain. He maintained that Hampton soil was not exhausted; that with fair manuring and proper culture it would bring a harvest, as it had done in his case. He gave a vivid and amusing description of gathering the sea-weed, of waiting hour by hour in storm and cold with the team to catch it, wading out into the water icy cold to secure it, then loading it when his clothes were so frozen as to keep him erect and the wheels so blocked with ice as to require great exertion to make them turn.

He had given up seaweed, though he still retained the *soubriquet* by which he had long been known. He now mixed his manures from the sheep-pen, the horse stable and the barn, and after working them over and decomposing, put them in the hill. From one and seven-eighths acres he harvested two hundred bushels of ears of corn, besides pop corn enough to last for years.

Further remarks were made by Messrs. Philbrick, Brown, French, Lawrence, Lamprey, Jr., and others, when thanks for the interest manifested were expressed by members of the Board, and a resolution complimentary to the Board was offered by Mr. Lamprey and unanimously passed.

Judge Roberts closed with a brief and earnest appeal to the farmers of Hampton, and especially the young men, to stick to the pursuit of their fathers, so that by industry and frugality they could secure a competence and enjoy the blessings of life.

THE BOARD AT PETERBOROUGH.

The next meeting was held at Peterborough on the 7th of January. Present, Adams and Lawrence accompanied by Hon. Warren Brown of Hampton Falls and D. H. Goodell, Esq., of Antrim, as volunteers. We were late in reaching Winchendon on our way to the meeting, and most sadly disappointed when we found no train had passed over the Monadnock road for two days in consequence of the ice that covered the rails. A pair of spirited horses took us over the road at nine miles an hour, and we reached our destination at one instead of eleven o'clock. We found a

good number of farmers assembled in the Town Hall awaiting our arrival.

The Secretary took the direction of the meeting and occupied some minutes in explaining the object and views of the Board, and showing the work already performed. He then introduced Mr. Lawrence who repeated his talk on the subject of

SAVING MANURES.

After his remarks Mr. Adams called attention to the subject, especially to the matter of pine leaves as fertilizers, and suggested that they were fatal to vegetation in their complete state, whatever they might be as a compost.

Mr. P. M. Rossiter of Milford stated his experience as favorable to pine leaves and pine sawdust. He would have absorbents, and in the absence of others used pine dust, and knew it to be beneficial. He had no faith in phosphates. He endorsed most of the paper read, and especially the portions referring to saving manures. It is the secret of success.

Mr. Warren Brown of Hampton Falls urged the saving of liquid fertilizing material, but denounced phosphates. He raised hay, and found it the easiest in these days of high labor.

Mr. B. F. Hutchinson of Milford applies green manure, and gets a benefit the first year. He uses absorbents and tries to save all liquid material. Thinks dry muck the best put behind and under the cattle.

Capt. Samuel Adams of Peterborough thought the town farm and many private farms in Peterborough were badly managed. He thought grass the chief crop, favored often plowing and deep culture, advocated drainage as an advantage to farmers, and showed how he had gained thereby.

Mr. Lawrence spoke against green manure, insisted that it should ripen, defended the pine leaf theory and quoted authorities. In the pine is thirteen per cent. ammonia, in hard woods about eight per cent. Not all farmers were so unfortunate as Mr. Rossiter and Mr. Brown, for one hundred and fifty thousand dollars worth of phosphates were sold in the State a year. He argued that land can be improved by fertilizers.

SPECIALTY IN FARMING.

Mr. D. H. Goodell of Antrim read a paper on "Specialty in Farming," in which he showed in other occupations specialties

paid and that they would do so on the farm, and he cited many instances. Mixed farming is impracticable now. He then discussed several products which when made a specialty were profitable, particularly the butter product, which he pronounced inferior at the southwest.

Mr. J. B. Moulton of Milford thought Mr. Goodell had made mistakes in regard to the butter question, for he had seen good butter in Kentucky and Virginia. All that was needed was that the plow be used to succeed. He cited instances of improvements in crops in consequence of plowing deep. He referred to a field of six acres that produced but little, which he dressed with all kinds of animal manure and material from the tannery, even spent tan, and grew a product of one thousand one hundred bushels of corn, ears. He favored superphosphates, and thought they paid.

Mr. C. C. Shaw of Milford endorsed the manure essay, but thought the pine leaves a little too big a dose for him. He sustained Mr. Goodell in his talk on butter. There is but little good butter south of Philadelphia. Grass pays, and so do turnips, millet, etc.

Mr. Henry Gray of Wilton urged the saving of all fertilizing matter. The farmer loses too much, especially the liquid manures.

Mr. Shepley of Fitchburg referred to the spent tan. He explained the use of plaster and tannic acid in the tan.

EVENING.

In the evening a large number of gentlemen and ladies were in attendance, and the interest was kept up for a session of three hours.

Hon. Warren Brown read a brief and appropriate paper on "Agricultural History and Practices." He gave the biblical record of farming, the Egyptian, the Chinese, Roman and modern. The American system was regarded as an exhaustive one, and we must adopt a different system or abandon the practice. He spoke of the inclination of farmers to complain, advocated the adaptation of crops to soils, urged more system, more intelligence among farmers and more pride in personal appearance. He maintained that farmers could make money as fast as the average of men, and did not rob the government nor steal rail-

roads. Mr. Brown, being a practical farmer, commanded the attention of the audience and was well received.

Mr. B. F. Hutchinson of Milford spoke earnestly in favor of the prosperity of the farm, and expressed the idea that a farmer's home, if rightly managed, was the most satisfactory place on earth.

Dr. Albert Smith of Peterborough hoped his friends would not laugh when they saw him making a speech in a farmers' meeting. He said the farmer should exercise judgment and see at once that constant cropping had reduced the soil, and now comes the demand for compensation, and will not be satisfied. What can we do? is the question. He advocated more study in the occupation, and commended the Agricultural College.

Charles Wilder, Esq., of Peterborough, to whose efforts is due much of the success of the meeting, made an interesting talk, suggesting many good points, in regard to the growing of crops, referred to Gov. Steele's practice, special farming, fruit growing, feeding stock, butter, vegetables, sheep, etc.

J. B. Moulton and C. C. Shaw of Milford, Mr. Goodell of Antrim, and others followed in the discussion.

AGRICULTURAL SALVATION.

At eight o'clock, Mr. Adams of Manchester, the Secretary, gave an address on the obstacles to farming, and how to meet them. He stated the complaints of the farmer, and then based a half-hour's talk on the answer given by an old farmer when asked how to save the farm from impoverishment and its owner from want, viz: Be industrious, be frugal, be thoughtful and attend to his own business.

DISCUSSION.

After the address, Mr. Brown of Hampton Falls spoke on stock and other matters named during the evening. Mr. Shaw and Mr. Richardson of Milford engaged in the talk, and Mr. Richardson gave as a dressing for potatoes the following: One cord of manure, three cords of muck, four casks of lime, four bushels of salt, dissolved in forty gallons of water.

A vote of thanks was passed to the Board and remarks complimentary to the audience, which was a superior one, were made by Messrs. Lawrence and Adams.

The Milford farmers added greatly to the interest of the meet-

ing, and manifested an intelligence that commended them to the people of Peterborough.

Samples of farm products were presented but were not prominent.

THE BOARD AT MARLBOROUGH.

The Board met at Marlborough on the 8th inst., according to previous notice. A portion of the members drove across the country from Peterborough fifteen miles to the place of the meeting. The gathering was not as large as that at Peterborough, but was composed of earnest and interested hearers.

Dea. Buffum, the member from Cheshire, was first on the ground and had opened the meeting in advance of our arrival. The first regular exercise was a brief paper by Senator Brown, the same that he read at Peterborough.

The morning hour was occupied in a general discussion. Col. Converse of Marlborough said he thought farmers were unwilling to experiment, at least not fully and repeatedly. He had used plaster to great advantage and had succeeded well. He urged the organization of Farmers' Clubs, which could do great service to the farm. He gave an account of a barren tract of land which was made to increase its product forty fold by the application of manures and proper culture.

Mr. Buffum made a good talk about neat stock, urging, as he has done before, the improvement of stock of all kinds.

Mr. Woodward of Keene made brief remarks and related his experience in keeping cows. The discussion was kept up until past noon by Messrs. Adams of Jaffrey, Converse, Buffum and others .

THE POTATO QUESTION.

The afternoon was occupied in the consideration of the potato question. Mr. Adams repeated his lecture on the subject. Then followed a discussion in which Mr. Hardy of Nelson, Col. Converse, the Secretary, Mr. Harvey of Marlborough, Warren Brown, Mr. Stratton and others took part.

Col. Converse remarked that "we farmers are not particular enough to note down the mode and result of our experiments. I once, after having been repeatedly told by a full-blooded Irishman that our Yankees seeded quite too heavy, tried the dis-

secting process and planted in a field, seemingly all alike, two rows with but two eyes in a hill; the next two with one medium sized uncut potato; the next two rows with four eyes in the hill, and so on alternately through the field, and at harvesting in every instance the two-eyed rows took the first premium, the four-eyed the second, and the whole potato the third, by a marked difference in the quality, measure and weight, though not in numbers. I was satisfied with the experiment, and have cut and planted but two eyes per hill ever since, except a row or two, each year, of whole potatoes as a further proof or test, and still believe in and rely upon the two-eyed doctrine as the only means or hopes of my salvation. In consonance with the principle of what I have just said, I will further state that some thirty-five years since, in the extreme northern part of the State of Vermont, upon burnt land, I raised thirty-six bushels of good potatoes from less than six quarts of seed and seeded too heavy at that with eyes, taken from the tubers we were obliged to save for eating purposes, or go without, as it was utterly impossible to procure a supply in that place that season. Thus necessity became the father as well as the mother of this trial. And of late I have practiced the saving of the eyes (of all my best cooking potatoes, commencing as early as the first of January to cut and lay them away in the cellar) of about half the size of a chestnut, and certainly for myself, I had much rather have the eyes saved in this way, planted two in a hill, than the full sized potato from which they were taken. Eyes saved of the size named, although they may appear dry and worthless at planting, will grow well with me and perhaps with you. Therefore let every farmer try a few hills in this way, and thereby satisfy himself upon this all important subject of growing the best of potatoes for culinary purposes.

Mr. George Harvey said that years ago when a boy, he with his father planted on old ground, a bushel of red potatoes, from which they dug in the fall one hundred bushels.

After an hour's warm debate on this subject, it was decided to present the subject of "Manures," which was taken up by Mr. Lawrence. A spirited discussion followed, Mr. Ryan, Col. Converse and others taking part.

In the evening, Mr. Joseph B. Walker of Concord, who had been delayed by late train, arrived and occupied the hour in a practical lecture on "Plowing," of which we have before spoken.

It was now eight o'clock, and word was given that it was about time for the Board to leave for Westmoreland.

Mr. Adams, the Secretary, occupied ten minutes in urging farmers to keep up with the times, to depend on themselves, and maintain their rights. They must be men and be prepared to defend their interests.

After complimentary words the meeting adjourned, having been very satisfactory in its character.

THE BOARD AT WESTMORELAND.

At ten o'clock at night our party reached the station at East Westmoreland, and in a driving storm had an hour's ride to the main village in the town, but a waiting landlord, with warm rooms, soon reconciled us to our lot.

On Thursday morning, January 9, before ten o'clock, people began to gather at the Town Hall, and during the forenoon a two hours' session was held. The subject first taken up was that of

PASTURE RENOVATION,

Mr. Adams, the Secretary, occupying a half-hour in a discourse. Messrs. Kendall of Westmoreland, Brown of Hampton Falls Walker of Concord, Lawrence of Epping followed in an animated discussion. The result reached in the debate was that the rough and distant pastures should be given up to wood; that fields and cleared woodlands should be added to pastures; that rotation should be regarded; plowing be practiced; lands be drained; sheep be kept; the bushes cut and burned; and that, to a certain extent, top-dressing should be resorted to. The entire forenoon was occupied in the consideration of this subject.

AFTERNOON EXERCISES.

Senator Brown opened the afternoon exercises with reading his paper on the "History and Dignity of Farming." He was followed by Mr. Walker of Concord in his paper on "Plowing."

After the reading of the lecture, Mr. Walker's opinion was asked regarding the Lutkin plow, and his decision was given against it.

Mr. Sargent of Hinsdale objected to the doctrine that fall plow-

ing will kill insects; other objections are that gases and other material pass off in the air and winds. He thought we couldn't plow without dead furrows, and argued they were as objectionable by Mr. Walker's plans as by any other. He favored hoeing into the dead furrows, or filling them up by the next plowing. The treading of the cattle by turning on plowed corners is not very objectionable; the crop is not poorer for it; facts show it. Lapping or dropping furrows will depend on the soil. He referred to the practice of tobacco growers.

Mr. Walker said he knew little about tobacco, and nothing about the worms that infest the land, but the white cut-worm will be killed by the plowing in autumn. Mr. Walker contended that the treading down of the soil did injury.

Mr. Sargent commended the idea of cultivating all the space, to the wall or fence, even by the use of the pick-axe.

Mr. Brown of Hampton Falls believed in good plowing in order to succeed; people had dispensed with oxen and used horses, and had in consequence failed to plow well. Mr. Brown complained of soft plow-points, now costing double their former price. The point and cutter of the plow should be kept sharp. He used the swivel plow, but did not regard it as perfect, though it sometimes made good work. It required a long yoke, and care in holding; he goes for flat furrows, and for fall plowing, for the crumbling of the soil by freezing.

Mr. Sargent doubted if freezing improved the ground.

Mr. Lawrence favored the reversible plow, and related favorable results with the Lufkin. It is easy for the team, for it changes the necessity of one ox going all the time in the furrow. It is applicable to all shapes of land. The large size should be used.

Mr. D. Livingston favored the Lufkin plow; it will run for rods without touching, and always run smooth. He condemned the practice of piling up furrows against the fences. The woodchucks were destructive and burrowed in such places. To kill the cut-worm by plowing, plow in August. The miller does not deposit its eggs on plowed ground. Mr. Livingston goes for plowing in the fall, even for oats.

Mr. Isaac Stratton of Keene commended the lecture on plowing, and favored deep plowing to increase the crop. Roots do not often go deeper than the plowshare.

After further discussion which elicited nothing new, the meeting adjourned until

EVENING.

At the opening of the evening session, Mr. Buffum made a pleasant talk, brief in its duration, urging the importance of inducing the young men to abide by the farm. He counseled parents to encourage their children and to give them some means of getting a little money.

Mr. Lawrence gave his lecture on "Manures," which was followed by considerable discussion.

Mr. Lord maintained that nature often made a restoration of the lost elements in soil better than we could do, but thought we might shorten the process.

Mr. Sargent of Hinsdale referred to the amount of waste by the wind after fall plowing. He said cart-loads were thus swept away, and he felt sure that men did not apply so much manure as they thought.

Several residents of Westmoreland were called on to speak, but they declined.

Mr. Brown of Hampton Falls referred to points in the address, some of which he condemned, and others approved.

At this hour the Chairman announced that an address would be given by the Secretary. Mr. Adams occupied a half-hour with the way for farmers to meet the obstacles before them.

After the address further remarks were made by Mr. Walker of Concord, Mr. Brown of Hampton Falls, Mr. Lawrence, Rev. Mr. Barber, Dr. Dunham, the Secretary and the Chairman, and the meeting was kept up until ten o'clock, scarce a person from the large audience leaving the hall. It was one of the very best meetings ever held by the Board. The members and those who accompanied them were most cordially received by the good people of the town.

Mr. Bennett brought into the meeting several specimens of apples, one a handsome and unusally good flavored fruit, and the other a fine apple tasting like the Baldwin, and which he bought for a Baldwin. Mr. Sargent of Hinsdale presented a Seedling Sweet with very small core.

Mr. Reuben Kendall brought in some fine specimens of corn, the Sanford, or a variety like it, and the Holden, the most perfectly filled corn we have seen. These samples, as well as one furnished by Mr. Francis Brown, were sent to the rooms of the Board in the State House.

THE BOARD AT LYME.

The fifteenth meeting of the Board was held January 16, in the pleasant and intelligent town of Lyme.

At one o'clock a good number of the citizens of that and the neighboring towns having assembled, Col. Sawtelle, President of the Farmers' Club, made brief remarks, welcoming the Board and commending it to the confidence of the farmers of the State. He then introduced Mr. Humphrey, the Chairman, who, after introductory remarks regarding the object of the organization, read his paper on "Fairs and their Management."

After the address by Mr. Humphrey, brief remarks were made on the subject by Mr. Flint of Lyme and the Secretary. Mr. Flint told humorously his experience in attending the New England Fair at Manchester. Mr. Adams thought his friend Flint had thereby enjoyed an experience which would be profitable to him, and that if he got it for a dollar he ought to be satisfied. The Secretary then urged that promptness be practiced in the discussions of questions proposed, in order that as many subjects be presented as are profitable during the afternoon and evening.

As no further discussion was offered, the Chairman introduced Dr. Kingsbury, who read a paper on "Sheep and wool producing." He argued that in order to succeed there must be an aptitude for the business; we must have a proper location; must employ proper means; must be educated correctly, which is absolutely necessary; the sheep-fold must be the place of study and the animals the text-book. It is important that the animal should have a sound constitution, and then the management should be such as to secure a continuation of health. There are fixed laws in order to succeed. Examples were given to illustrate the difference between the management of different men within his own knowledge. The speaker maintained that too many sheep are often crowded together, producing disease; exercise is essential, especially to breeding ewes. He condemned the usual method of washing sheep and of shearing them, and of feeding and sheltering them.

Dr. Kingsbury dwelt on the management of lambs, and maintained that operations required by the knife, such as cutting off the end of the tail and castration, should be performed when the lambs were quite young, but two or three days old, if healthy.

They then received less shock to the system. He recommended the use of persulphate of iron to check bleeding. He closed by showing that sheep-keeping pays even in times of low prices.

[This paper of Dr. Kingsbury's the Secretary expected would appear in this volume, but the author prefers to retain it for reasons that will probably appear in our next annual report.]

Samuel Flint, Esq., said Lyme was the head centre of sheep business in the State; that Walpole compared well. Lyme reported nine thousand two hundred and fifteen sheep at the last census, with an average yield of five pounds nine ounces of wool. He presented a long schedule of figures contrasting the two towns named.

Col. G. F. Sawtelle insisted on exercising gentleness among the flocks, and of catching sheep by the necks and not by the wool on the back. The common way injured the animals and produced an irritation and inflammation. He held to sheltering sheep and keeping the fleeces dry; a wet shirt was uncomfortable and dangerous. Cold blasts and storms should not visit them. Sheep were indicators of cold and sought protection as cold was experienced.

Dr. Kingsbury argued that they should not be shut up in unventilated rooms or sheds. They need air and seek high places to get it. If shut up close they lost muscular power and became unhealthy. He recommended the feeding of roots to sheep liberally.

Mr. Palmer of Orford advocated keeping the Merino sheep, and said he had not changed his mind since he advocated their claims at Lebanon two years ago. He had on a suit of clothes home-made from their wool, which he had had for ten years, and the trouble was they wouldn't wear out.

Mr. Palmer made an interesting speech on this subject which will be found under the head of Sheep Husbandry in this volume.

Reference was made to the success of the Messrs. Camp of Hanover in the sheep business, and those gentlemen were called to relate experiences in the business. They had brought up their flocks by changing bucks and breeding up.

Mr. Tenney of Hanover referred to the success of Mr. Enoch Freeman of Lebanon, who favored giving corn in small quantities to breeding ewes, but he said Mr. F. had suffered a loss last year by allowing them to feed on hemlock boughs.

Several other gentlemen spoke on the subject, when the meeting adjourned until evening.

At an early hour in the evening the large hall in the church basement was filled with ladies and gentlemen, constituting one of the best audiences of the season.

Two written addresses were given,—one by Mr. Lawrence on “Manures” and the other by Mr. Adams in answer to the question, how shall we be saved as farmers?

In addition Mr. Joseph Kidder occupied a half-hour in presenting the claims of the soil for a return of the elements abstracted in the growing of crops. He spoke effectively, and took occasion to urge a better education of the farmer and more liberality at home.

A discussion was maintained by Messrs. Flint, Palmer, Kingsbury, Lawrence and others, and the interest of the meeting was kept up until near ten o'clock, when complimentary remarks were made by various gentlemen, expressing great satisfaction with the success of the meeting, and the Board took a reluctant leave of the good people of Lyme.

THE BOARD AT FRANKLIN.

On the 23d of January, the Board held their sixteenth public meeting for the season. They met at Franklin, a good farming town, but more important for its varied manufacturing interests. A light snow had fallen the day previous, and had so blocked the roads back from the river farms as to bar travel. The audience, therefore, though fair in point of numbers, was much smaller than the Board had reason to expect. There were present Messrs. Humphrey, Adams, Mason and Kingsbury, with Col. Clough, John McNeil of Concord, and B. M. Mason of Moultonborough as volunteers.

The members were met at the station by Warren F. Daniell, Esq., who took the party about the town to the various objects of interest, and then to his residence and its generous hospitalities.

The meeting was held in the town hall, and was attended by the substantial farmers of the vicinity.

MR. HUMPHREY'S REMARKS.

President Humphrey called the meeting to order, and in a very happy manner stated the object and purpose of the State Agricultural Board. The statement was so important, that we repeat some of its main points in detail. A prejudice has existed in the minds of some, implying that the members of the Board are merely book farmers, with little or no practical knowledge of agriculture. Happily this feeling is in a measure dissipated. Although the members of this Board are not ignorant of practical agriculture, they do not presume to the position of teachers and instructors merely, but their object is to awaken interest in, and discussion of, the topics pertaining to the branch of knowledge with which they deal. They receive no pay for the time and labor spent in this cause; their actual expenses only are borne by the State. The Secretary, bearing more constraining and imperative duties, has a yearly salary. Other Boards of Agriculture hold a few meetings yearly in larger places, while the New Hampshire organization communicates with the farmers themselves, and in an extended series of gatherings, and thus manifests a more practical efficiency.

The Secretary occupied the first hour in a consideration of potato growing, having made material modifications in his discussion of

THE POTATO DISEASE.

On this point he had maintained in his previous talks that the disease was a fungus growth, but having been at times opposed on this point, he took pains at this time to quote authorities and give a fuller explanation of the process.

Col. Clough followed in a brief talk advocating the culture of the potato on soil manured the year previous. But he did not regard potato growing profitable business. Like Mrs. Partington in the egg business, he always found them the cheapest when he had the biggest crop! In regard to the Colorado beetle he had great doubts if it ever visited us. He had seen its ravages at the West, but thought its progress East would be checked.

STOCK BREEDING.

John McNeil, Esq., of Concord, occupied a half hour in a presentation of the matter of breeding domestic animals. He believed in improving our natives, not in importing stock; for we

had elements of hardiness and other excellent qualities which could be brought into a distinct breed of great value. Of all foreign breeds, the Short-Horn is best. But acclimation is necessary and money is required at the outset.

He advocated the "in-and-in system" of breeding. It was done in regard to Short-Horns, and other breeds, giving uniform results. It might be necessary, now and then, to step out in a single instance and introduce a male animal of the same breed or same general characteristics, but of a different family, in order to revive the blood; but after a single year's use of such animal he should be discarded and the original close breeding be resumed. It would then be all right.

Mr. McNeil gave the result of his own experience in this respect; also his practice in mingling Devon blood with Short-Horn. The former was successful, the latter unsatisfactory. He gave a history of his experiments with what he called his "line-back breed." He knew a cow that made, from April 1 to January 10, three hundred and fourteen pounds of butter, and in less time the next year, two hundred and fifty-six pounds. He bought her, found a proper mate of corresponding marks and make-up, mated them, and from that pair produced a family of great similarity, breeding in-and-in repeatedly with no bad results until to his great disappointment he found among his nine calves one year a large number of deformities, double heads, double tails, extra legs and crooked sides. He was staggered, but resolved to try again, selecting only perfect animals for breeding. After that for many years he had nice calves, of uniform color and form and excellent milkers. There will be instances of taking back to some poor blood. It is so with the horse as well as neat stock, and other animals; and he gave instances of a horse — the Barker horse for example — stamping his own bad temper on his progeny.

He urged with great earnestness not to breed from diseased animals, for spavined horses will produce spavined colts, and so with other diseases and malformations.

In regard to horses, he acknowledged a weakness; had owned sixty or more, and in his early days had been badly cheated. It is an expensive luxury to keep horses, especially with no work for them to do. The three best bloods common in our State now he named as the Abdallah, the Morrill and the Honest Allen. These leading stock horses carry points and produce their like. The mother should be larger than the sire, and, by all means have a

vigorous constitution. The mother gives strength to the offspring, the sire communicates motion.

Col. Clough approved in the main Mr. McNeil's doctrine. Animals are the life of the farm, and that man who farms without keeping a good stock will fail. With them the manure heap is increased, and consequently the crop. We must improve, we can't stop. The farmer that with the same sunshine and rain grows less crops year by year is no farmer and will never succeed.

Dr. Kingsbury of Lyme read a brief paper on sheep culture, and occupied a half-hour in presenting a system of successful sheep management. The points named were similar to those given at Lyme, though in some respects more definite. It was a valuable talk which was well received.

Mr. W. F. Daniell of Franklin referred to the fact that gentleness as named by Dr. Kingsbury is a great matter in the management of domestic animals, and he urged it with great force, especially in regard to the horse. Another matter to which he called attention was that of feeding. He referred to the management by Mr. Ward, of Franklin, who could keep horses and other animals on less fodder and make them come out better than any man he knew. He never saw animals with anything before them in Mr. Ward's barn, and yet they always were in good condition. It was a great secret.

Mr. B. M. Mason of Moultonborough spoke regarding his management of sheep, keeping up a flock that his father left, which had been perpetuated for fifty years, only now and then introducing a new buck. He continued giving facts as previously reported at the Wolfeborough meeting.

The Secretary suggested that if Mr. McNeil would take animals already bred for years in a systematic course, improving year by year, and apply his practice he would be doing a greater service than by the method he recommended. As "time is money," he might make quite a fortune by taking the advantage of the improvements that others had made during the last two centuries.

EVENING SESSION.

The first portion of the evening was occupied by the Chairman in considering the management of fairs and especially horse trots connected with them.

After that Dr. Mason presented an able address on agricultural chemistry which has already been named in our former reports.

A DISCUSSION

followed. Rev. Mr. Mack made some remarks in reference to the Orphans' Home farm. He said we are raising farmers at the Home, and intend to get back some of the money paid to Massachusetts for transporting orphans to homes in the West. Mr. B. M. Mason thought it time for farmers to assume their proper position. At the New Hampshire State fair last year the farmers were driven out of a shelter into the rain, to give room for the sporting fraternity; farmers trudged along on foot, while gentlemen, not farmers, rode under musical escort. He didn't think the farmers were benefited by the fairs, not one in ten, as they are often managed. Farmers are overtaxed; all their property is open to the gaze of the assessor, giving moneyed men the advantage in this particular also.

In answer to questions, Dr. Mason mentioned the necessity of complementing soils of opposite qualities by each other. A man who owns a sand bank and a peat bed has manure enough. The laws of chemical affinity should always be observed in the application of manures; for instance, ammonia has an affinity for the sulphur in sulphate of lime, as lime and silex have for each other. The development of seed demands phosphates. Put bone dust on an old pasture that will not seed in. Dr. Kingsbury complimented Dr. Mason's paper. It showed the power of the trained mind when turned to agriculture; it tends not only to pecuniary success, but to enlarge pleasure in the prosecution of labor. He closed with his compliments and expressions of gratitude to the people for their attendance. A vote of thanks to the Board closed the meeting.

THE BOARD AT NASHUA.

On the morning of the 29th of January, a number of the people at Nashua assembled at the Court Room to meet the Board, and engage in a discussion of subjects of agricultural interests.

Mr. V. C. Gilman called the meeting to order and introduced the Chairman, who explained the object and work of the Board, especially during the present season. This is the seventeenth meeting of the Board this winter.

After a little talk by Messrs. Gilman, Roberts, and Adams, it was decided to first listen to the paper of the Chairman on

MANAGEMENT OF FAIRS.

After the reading of this paper Judge Roberts expressed his satisfaction with the document. He felt that the moral bearing of the address was worthy of approval. We must look to the moral foundation of all enterprise. Horse racing has no element of advantage to the farmer.

He referred to the importance of the horse in business and in pleasure. He thought if the horse disease had swept away a thousand fast horses it would have been little loss to the public.

He referred to the value of fairs, but demanded that there must be more care in their management. The appointment and action of judges is important, but difficult to be managed. The farmers must manage the fairs to be benefited by them. The invited guests are those, too often, who have done little for the cause. The working men are not regarded as they deserve.

Let horsemen hold fairs, if they wish, but let us not allow them to spend our money, or corrupt our sons. We, as farmers, must take hold of the matter and lead off.

Mr. Gilman of Nashua followed. He believed the essay embodies much sound sense. There are many difficulties in the management of fairs. The matter of obtaining judges is one. The fault is not always that of the officers. There is a negligence on the part of the people.

The trotting is another difficult thing to manage. He held to showing trotting horses, but that they should have only a fair consideration, just such as is awarded to other departments. He said if we could have such men as the late Hiram Woodruff, so honest and reliable, there would be no cause of complaint.

There is a fondness for fast horses even among farmers. It is not cruel to drive these horses fast,—not so much so as is often manifested in regard to draft horses or to oxen.

Mr. Adams said complaints of the wrong management of fairs often occur, when honesty is intended by the officers. There should be an illustration of "the one man power," in their case; somebody should have the power to say, "This is the law." Speaking of shirking entry fees, he said the Treasurer of the New Hampshire Society will not put a man's name on the list, unless the cash is paid over. Judges should be competent men and not

such as are simply prominent before the public. Of dishonesty out of official knowledge, at the meeting of the New Hampshire State society, he believed two hundred dollars were paid to a judge, and perhaps the managers are to-day ignorant of the fact.

HORSE MANAGEMENT.

At the opening of the afternoon session Col. John McNeil of Concord made a long and entertaining talk on the horse, and the management from the day it is dropped until he is worn out. His remarks are fully given in this volume.

MARKET GARDENING.

Hon. Simon Brown of Massachusetts, being called on, said he lived in a market garden and was surrounded by market gardens.

He took the ground that we eat too much meat for profit and for health. There can be great saving by access to a barrel of nice pork and good fresh garden vegetables.

There is a demand for more vegetable productions. This is indicated by the action of the expressmen from Boston to Nashua, Manchester, and Concord. They carry an abundance day by day. Thousands upon thousands of dollars are yearly expended in the trade of vegetables carried into the country. The argument is that it is cheaper to buy than to grow them. But this is not the fact. There is no better land than right here for this purpose. Mixed farming is best; farmers must grow what they eat so far as possible. Take these sandy loams about Nashua, and you have just what you want. You must get more than one crop; he can get four crops sometimes. First, sow with spinage in the autumn. It will start early and bring a good price as greens. The early potatoes follow; sometimes sprout and sometimes not. The next crop is cabbages between the rows. Then follow turnips, in drills or broadcast.

These can be grown here as well as in Boston, unless fertilizers be wanting, and some of the commercial manures are adapted to the soil.

Then again you can grow strawberries better than buy them. It is as easy to grow them as to grow corn. Why not do it? It is good policy. The same is true of asparagus. You can get it from seed, or better from roots. Our town, poor as can be as to soil, has become rich by growing asparagus and other vegetables.

It is requisite to drain the soil, then manure thoroughly, furrow four or five inches, scatter the seed and cover an inch deep. Transplant the next spring. It will last many years. One of mine has lasted twenty-four years. Cover in the fall with coarse manure, rake off in spring and keep down the weeds, and the result is satisfactory.

Lettuce is important and easily raised. It pays. Raspberries and blackberries are profitable and cost nothing.

Mr. Roberts followed, and argued that it is the greatest folly to send to Massachusetts for vegetables. We can grow them anywhere, and we neglect our duty when we neglect this branch.

Farmers are anxious to get rid of the various kinds of work, and there is a disposition to take resting times too often. He wants all his men on rainy days, or just after haying. These are the times we need their help; we don't work as mechanics do. These leisure hours accomplish grand results. Don't know about wheat. He thought we should grow what will bring the most money at the least cost. There must be no waste time nor waste land. Don't let the women of the house have occasion to borrow, but grow all you can.

Mr. Wm. Weaver of Nashua was called up. He appeared as an Englishman and acquainted with marketing. He has made settled plans about gardening. He has grown six crops. He favored steam plowing and running a steam cultivator. This will enable its operator to get first to market. This will allow work night and day, and cause a great advance in preparation. He desires straight rows, seed placed at uniform depth, so as to allow surface work before the germs appear. We must make up by machinery what we lack in regard to season. In New York, New Jersey, &c., the market gardeners can get help by the wagon load. Here we can't get it. Great crops of beets, onions, etc., are grown per acre,—even six hundred or one thousand dollars' worth sometimes. He spoke of the fabulous prices for garden crops paid by his neighbors.

J. W. Manning of Reading said it takes a great amount of labor, time, manure and study to succeed. The trouble is there is nothing to be depended on in gardens about us. Dealers can't be sure if they depend on home market. Mr. Emery of Lawrence overcame the objection by providing for all. There is not sufficient perseverance, not uniformity enough among our farmers and gardeners.

The discussion was continued by Mr. Hills of Windham, Governor Brown, the Chairman, and others, when Mr. Kidder of Manchester was called on to give some suggestions in regard to butter-making, preparing and putting up articles for the market. He had supposed that this discussion would have taken a little different course. He fully endorsed Governor Brown in his remarks, that he believed every family should raise its own vegetables, but probably the largest portion of the vegetables purchased in this city or neighboring cities, are purchased by those who have not an inch of land on which to raise their vegetables, and they must be procured from such a market as will be certain to supply them. When articles are put up for the market, people would never complain of the price, if the article was honestly represented.

Mr. Lawrence of Epping did not think the people of New Hampshire were remiss in properly preparing their goods for market. Think Judge Roberts and Governor Brown ought to make market gardening profitable, from their available location and facilities for carrying it on. We should adapt our crops to our localities, and situated eight miles from a market, it is not profitable to expend the whole amount of manure that would be raised upon a farm of one hundred acres in dressing a couple of acres of vegetables.

Judge Roberts explained that the object of his remarks was, that the farmers of this State did not raise enough vegetables for their own consumption.

Governor Brown was sorry he was misunderstood in his remarks. He still maintained that mixed farming is our salvation, and that the farmer must keep the money he gets for his crops, and expend it in buying articles for his home, and not send to Boston for his celery, lettuce, etc. We do not want all farmers to go into market gardening, but each one raise enough for his own use.

Mr. Kidder asked what Governor Brown intended by mixed farming; what could farmers on the upper Connecticut do by raising a little this and a little that — where there is no market, and where up in that section there are plenty of starch mills, which consume all the potatoes that can possibly be raised there, and whether a farmer should not raise whatever he finds a ready market for.

Governor Brown thinks Mr. Kidder has expressed his views — he wanted every farmer, where the soil and the climate were

adapted to it, to raise all he needed on his own table, as far as possible.

There were several articles of farm product present. Hon. Mr. Gilman showed a specimen of Coolie corn. Col. King exhibited several varieties of seedling potatoes, among them Campbell's Seedling, and a late kind developed as a "sport" of the Early Rose, and looking much the same, which were examined by the people on the adjournment of the meeting.

EVENING MEETING.

At the meeting in the evening, after some delay, the Secretary called up Governor Brown to introduce the subject of

FRUIT CULTURE.

Mr. Brown gave his experience in planting apple and pear trees, and a great variety of other trees.

The apple is the leading fruit of New England. The pear is rich and delicate, excellent as a preserve or as a dessert. The apple is different, and may be used in a great variety of ways.

One half the trees planted never bring fruit. The land is often too wet, the setting is not right, and they are neglected afterwards.

He chose for his trees a sandy loam, dug holes eighteen inches deep and six feet in diameter, the surface soil being thrown back into the hole. Took care to save as many roots as possible in taking up the trees from the nursery. Great care was taken in setting, the earth being put close up under the main roots, and all the small roots being carefully handled. The land was then cropped with all kinds of vegetable growth except weeds. The growth of branches was fifteen inches when the ground had corn on it, to twelve with wheat.

After the budding and blossoming, the tree puts out new leaves of a different color, showing a change in the nature of the tree.

Don't prune in April or May according to the old custom. The tree has then become active in warm days. The sap has been gathered up by the roots and sent into the tree, and then goes out to the bark. If cut then the tree bleeds, and the sap becomes acid and injures the tree. We must cut when the sap is not in the sap vessels.

He tried an experiment to prove this position. A limb had been cut with a long stump on a tree on his land when he bought it. He sawed off a section of this stump in April and painted the wound, but the sap pushed off the paint. He then singed it with a hot iron and tried many other experiments, until the stump of the limb was nearly used up. He then in *June* cut it off close to the tree, and found the result to be very different. Healing immediately took place.

He gave his experience in remedying the effects of mice-gnawing trees. When gnawed entirely around, trees may be saved by inserting scions, connecting the live bark above and below the bare spots. The sap will pass and the tree be saved.

Mr. Manning referred to Mr. Brown's success in fruit growing. He thinks the varieties of good apples and pears quite too many. The Baldwin is the best for all purposes, though the tree is tender and liable to be winter-killed. It undoubtedly was a native of Wilmington. A farm with no fruit is not so valuable as with orchards. Rocky land with a fair loam is best for apples. Cultivation is necessary to good orchards. Peaches have done well near Manchester on high ground, but not on river bottoms. Don't believe in growing a crop under trees, especially grass and grain.

There was a running talk between Messrs. Shaw of Milford, Shepley of Fitchburg, Manning and others on this subject, and the conclusion was that notwithstanding the abundance of fruit there is still encouragement to plant trees.

Mr. Brown referred to an apple on his farm which originated in Sanbornton and was grafted into his vicinity, called the Morrison Red; an excellent fruit, which brought six dollars a bushel at wholesale. "They are perfectly splendid." The Hunt Russet came from over the ocean.

Mr. Weaver hoped Mr. Manning would clear up the point regarding the application of fertilizers in solids rather than in solution.

Mr. Manning had a choice for solid substances, but it might be only a fancy.

Gen. Hunt occupied a little time in giving his experience in strawberries, which was not very successful. There is more theory than practice in farming. He had known a day's discussion in regard to where to put the manure, without any satisfactory conclusion. There has been farming on wrong principles.

VARIOUS TOPICS.

Mr. Shepley of Fitchburg was called up, and referred to his acquaintance with members of the Board. He came to get information, and he had been paid for his efforts. He then alluded to his land, which he regarded as poor soil. He applied nitrate of soda to grass and was paid by the experience he had. That gave him the knowledge that nitrogen was necessary to the growth of the plant. He then applied sulphate of ammonia to good satisfaction. Sink spouts make ammonia, as do other similar fountains of filth. Apply muck, loam and other fertilizers to such collection of filth and we have a good manure.

He referred to the prevalence of disease in England along the banks of certain rivers that had become foul by sewage. The sewage could not be purified in the river, but was rectified by putting it on the land, where it becomes useful. He referred with sad apprehension to the sewage of towns in this section carrying down disease to Lowell and cities below us. We must arrest it and neutralize its effects, or we have disease.

Another subject of importance is top-dressing. Its effect is wonderful. He alluded to the disintegration of feldspathic rocks in the New Hampshire soil, as a nutriment to feed future crops.

The Secretary expressed his thanks for the attention given and the courtesy manifested in this meeting.

Governor Brown expressed his deep interest in the work of the farmers in his native State. He then paid the Board a splendid compliment for their work.

General Hunt endorsed the remarks of Governor Brown, and cordially sustained the efforts of the Board.

Judge Roberts paid his compliments to the farmers present, and urged them to depend more on themselves, to maintain the high position they now occupy and to go on to still higher positions. The farmer never cheats his creditors. He pays the taxes of the country and fights her battles. We must feel that our occupation is one of honor. We have a right to be proud of all our acts. Shall we give up our homes and go to cities and to ruin? No, never! Stand by the farm and remember the associations of your youth, and you will be happy.

Mr. Lawrence remarked that our meetings had indicated an increased interest from time to time. This was due in part to the action of the Board, but probably more by the return of better seasons and the counteracting influences of the past season over

the long continued and destructive drought. There is a promise of better harvests, and the farmer takes courage and goes on cheerfully to more work and increased crops.

Mr. Gilman offered a vote of thanks with earnest approbation of the work of the Board, and Mr. Weaver gave a cordial seconding of the motion which was unanimously passed and the meeting adjourned.

THE BOARD AT MILFORD.

The Board, accepting an invitation from the Hillsboro' County Society, met on the 30th of January in the Town Hall at Milford. After an introduction by the Secretary, Mr. Hutchinson was called to the chair, and presented Judge Roberts on the subject of

PASTURE RENOVATION.

The written paper prepared by the judge was left with his carpet-bag by the way, and he was obliged to depend on his ability to recall the leading points.

Mr. Adams followed in a style similar to that employed at other times and places, taking up topics omitted by Judge Roberts.

Mr. Lawrence was also called up, and referred to his experience in cutting a few bushes or running vines, but the better way is to take time just after the snow has gone and let the fire flash over the land. He plants potatoes in pastures and gets good crops and benefits the pasture land. He discussed fully the great draft on the soil by feeding milch cows, and the advantage of keeping sheep.

Hon. Simon Brown said this is the knottiest question in agriculture. The profit of the farm depends on the condition of the pasture. We must adopt a variety of means according to circumstances. He don't hold to plowing, for it takes too long to restore all the good grasses, but in some localities he would plow. Thinks that land recuperates itself by a growth of wood.

He asked what has become of the wood that makes the steam of the engine? We see the ashes and that is all. The smoke has gone, and we see it no more. It has been resolved into the original elements to feed your crops, if you will allow it to come back to the soil.

The atmosphere is the great resource of fertilization, and the speaker went into a consideration of the subject at length.

Mr. Hutchinson said pastures here are used to grow blueberries, and a good result is gained.

J. E. Foster of Milford and Governor Brown had a merry hit at each other on the matter of plowing pastures.

Moses Proctor of Milford had a small pasture but good one. He did not believe in soiling.

Mr. Foster said he knew of men who had got rich by letting their pastures grow up to wood.

F. W. Holbrook of Amherst related the story of a man raising flax. He plowed often and always in the morning. The advantage was that he turned in moisture and fertilizing matter.

A little girl, Myrtie Cram, daughter of Luther Cram of Lyndeborough, recited a capital poem, "Don't leave the farm," which was well received.

Mr. J. B. Moulton related his experience in burning over pasture land. He got more feed on five acres after burning than on twenty-five before.

DINNER ON THE FIELD.

At this hour, half past twelve, the Chairman announced that a recess of an hour would be taken, and that in this time a collation would be served in the hall. Cold meats, pastry, coffee, and an abundance of good things were passed around, and four hundred men and women were well supplied. It was one of the most agreeable features in any of the winter meetings held by the Board.

AFTERNOON.

At the opening of the afternoon session, Judge Roberts made an explanation of some points regarding plowing pastures, and plowing in general, and was followed in an earnest talk by Mr. McIntyre of Milford, on the importance of personal mental improvement, as well as the improvement of the soil, that we might make the world better for our existence in it.

VARIED EXERCISES.

The Secretary occupied the next hour in consideration of the means of meeting some of the difficulties in farming, and closed by urging the farmers to renewed efforts to improve their farms and their minds.

After this, Mrs. J. E. Wheeler of Hollis, read a brief but sensible paper on the duties of the housewife in the farm-house. She advocated neatness, industry, the exercise of judgment, and made some of us believe that Mr. Wheeler must necessarily be the happiest farmer in his town.

Mr. T. Kaley of Milford spoke of the relations of the manufacturer and the farmer, and specially commended the doctrine of the Secretary in insisting that New Hampshire must become a manufacturing State.

PLOWING.

Joseph B. Walker, Esq., of Concord, was introduced. He repeated his valuable lecture on "Plowing," which has been noticed before.

A WIDE RANGE OF TOPICS

was afforded by the evening's discussions. The only paper read was Mr. Lawrence's on "Manures." Remarks were made by Judge Roberts, Rev. Mr. Tilton, Governor Brown and Mr. Walker.

Judge Roberts, in speaking of Mr. Walker's paper on "Plowing," made the forcible remark that while political speakers are not without honor, the man who spends time, energy and intelligence in the development of an address like Mr. Walker's is not rewarded by the appreciation he deserves.

Governor Brown drew out a large number of farm items from his apparently inexhaustible supply of such material.

Mr. Walker spoke of his experience in farming, saving all his manurial resources, and buying when these fail—first stable manure if he can get it, and then commercial fertilizers—and declared that with all the impositions he had suffered, he was upon the whole better off for the use of the phosphates, etc., he had tried. Other remarks followed, with the usual congratulations, and the meeting dispersed with evidence of satisfaction in the minds of all.¹

The meeting during the day was regarded as the very best in all respects the Board ever held, and those gentlemen who had never before visited that section of the State expressed the warmest appreciation of the prosperity, the courtesy and the intelligence of the people.

CO-OPERATIVE WORK AND SPECIAL OCCASIONS.

ATTENDANCE ON FARMERS' MEETINGS.

In addition to these eighteen meetings which were held by the Board, several members engaged in the exercises planned by county and town societies and farmers' clubs. These meetings deserve mention in these pages, constituting as they do a portion of the legitimate work of the Board.

The Kensington Farmers' Club was addressed by Mr. Lawrence; the Union Club in Rochester, by Messrs. Roberts, Adams and Lawrence; the Hillsborough County Society's meeting at Amherst, by Messrs. Humphrey and Adams; that at Bedford by Messrs. Lawrence and Adams; that at Wilton by Mr. Adams, and Canterbury Club by Mr. Adams. Meetings were also announced for Pembroke and Sanbornton, but failed on account of storms. We should also mention as we have before that the South Acworth Club was addressed by Mr. Buffum.

The first meeting of the active and prosperous society in southern Hillsborough at which the Board was represented, was held on the 19th of December. The subject under consideration was the advantage grass-growing has over the cultivation of hoed crops. The subject was discussed fully, the Secretary of the Board taking part in the exercises. The next meeting at which we were present was held at Amherst on the 13th of February. The subject for the morning was the "Education of Farmers." The Secretary occupied a half-hour in an extemporaneous talk on that subject. In the afternoon Mr. Chairman Humphrey read his paper on "Management of Fairs." The next gathering was two weeks later at Bedford. At this meeting the Secretary made a talk on the subject of "Legislation for the Farmer," and Mr. Lawrence read his lecture on the subject of "Saving Fertilizing Material."

At Kensington, before the farmers' club, Mr. Lawrence read his paper on "Fertilizing Material" which was fully discussed.

At a meeting of the Rochester and Dover Union Club, Mr. Lawrence repeated his lecture, Judge Roberts discussed the pasture question, and the Secretary gave a written address on the way for farmers to improve their condition.

The farmers' club of Canterbury was addressed by the Secretary on the subject of "Pasture Renovation" and on "Potato

Culture." The subjects presented at these meetings will be more fully presented in connection with the reports of the several associations named, in case sufficient space is afforded in our volume.

A meeting called by the State Society at Manchester, held in February, was attended by the Chairman and Secretary, but the only matter under consideration was the management of fairs.

Members of the Board also attended many of the fairs in which our State has an immediate interest. The Chairman, Secretary, and Messrs. Mason and Lawrence attended the New England Fair at Lowell, and the Chairman took part in the evening discussions. The same gentleman and Judge Roberts attended the State Fair at Dover, and engaged in the discussions which were maintained at evening meetings. The county and town fairs were visited by several members of the Board, and they often took part in the public exercises of the occasions.

SPECIAL OCCASIONS.

Since the organization of the Board, Mr. J. Frank Lawrence, of Epping, the member from Rockingham County, has made a specialty of discussing fertilizers, and of showing the value of phosphates as the means of restoring the grass crop and consequently of bringing worn out lands to a condition of productiveness. His method has been given fully in former reports and the reader need only be reminded that Mr. Lawrence uses all the animal manures he can make, or can purchase at an economical price, but finds his chief advantage in buying phosphates and selling his hay. He plants little, but keeps his soil nearly all in grass. His plan in brief is this: After haying, he selects the sections of his grass land which produce the lightest crops, turns over the sod so as to allow the roots to decay, puts on a dressing of phosphate six hundred pounds to the acre, and seeds it down. The next year he has a good crop, without the cost of cultivating a hoed crop. As the land on his farm produces witch grass, but little seed is needed in laying down. In this way Mr. Lawrence in four years has more than doubled his hay crop, and last autumn sold his farm for some six hundred dollars more than it cost him three years before, and realized in net profit by the sale of hay more than two thousand dollars in the meantime.

In order to show that the statements he had made at farmers' meetings were not exaggerations, Mr. Lawrence invited a large number of personal friends and gentlemen connected with the

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press and agricultural organizations to meet him on the old farm on Thursday, August 22. About fifty persons were present. A visit was first made to the farm situated in that part of Epping known as the North River District. The place is now owned by Mr. Nathan Blake, recently of Bristol. The location is pleasant and the farm of one hundred and ten acres one of the very best in that excellent farming section of the State. The barn we found containing apparently sixty tons of first class hay, with a second crop on much of the ground that would pay for all the fertilizers applied to it within the past three years.

That Mr. Lawrence had adopted a wise system of farm management was not only evident from the farm itself and the crops in the barn, but was confirmed by the present owner, who regards the soil as very productive, and, what is desirable in these days of high labor, one man can do all the work required, except in haying.

Leaving the farm, the company returned to the village and enjoyed an excellent dinner at the Pawtuckaway House, and subsequently a four hours' sitting, during a severe rain, spent in off-hand speeches.

Mr. Lawrence gave an account of his farm practice, and then called up General Head, President of the State Agricultural Society, and in turn Mr. Humphrey, Chairman of the Board of Agriculture; Leander Wetherell, of the *Boston Cultivator*; N. R. Perkins, of Jefferson, member of the Board from Coos County; H. R. Roberts, of Rollinsford, member from Strafford County; James O. Adams, Secretary; Col. D. M. Clough, of Canterbury; Councillor S. P. Dow, of Epping; Joseph B. Walker, of Concord; General Hoitt, of Lee; Judge Fowler, of Bristol; S. C. Pattee, of Warner; Joseph Kidder, of Manchester; William C. Patten, of Kingston, and Capt. N. H. Brown of Derry.

Among other gentlemen present were William B. Small, of Newmarket, who left before the table talk; C. N. Healey, of Stratham; J. W. Odlin, Exeter; D. D. Perkins, Newmarket; Joseph C. Barly, William L. and N. G. Plumer, George Q. Dow, John H. Pike, D. L. Harvey, Joseph L. Lawrence and several other gentlemen whose names are not recalled.

Votes of thanks were passed to Mr. Lawrence for the agreeable entertainment, to Mr. Bunker for the bountifully spread board, and to the ladies of Epping who generously and elegantly decorated the tables with a profusion of bouquets.

This special occasion in which the Board participated was the first and only one of its kind, and though not directly in their line of duty, the exercises had a tendency to awaken a new interest in the proper cultivation of the soil.

Another special occasion, on a broader scale, in which members of the Board participated, was an excursion to northern New Hampshire. Early in the summer, a proposition was made by parties residing in Coos county to members of the Board of Agriculture to make a visit to that section and there learn what resources it offered for financial investment. It was claimed that the immense forests, as yet untouched by the hand of industry, were sufficient to supply the demands of many cities for generations; while the soil appropriate to cultivation and yet awaiting the plowshare was more productive than the broad acres on the banks of the Merrimack and the Connecticut, or by the margin of the ocean.

This proposition suggested to the active minds of the President and Superintendent of the Montreal Railroad the idea of an excursion over their road from Concord to Northumberland, with a visit to Connecticut Lake and a detour to Dixville Notch and visits to such other mountain localities as were achievable. So the contemplated quiet trip of a half-dozen members of the Board of Agriculture expanded into a grand excursion, in which the Governor and Council, the Congressional delegation, members of the House and Senate, and other officials participated.

We gather from notes of travel such matters as pertain to the agricultural interests of that section of the State without attempting a detailed record of the excursion.

The first day left us on the banks of the Pemigewasset at Plymouth. From that point up Baker's river, new and attractive scenes were constantly unfolding, and all the way on the second day's journey, both by rail and wheel, the landscape was one of varied interest, now grand with lofty mountains, steep precipices and wild, rough sections; now charming with beautiful meadows and verdurous hillsides, and clear, fresh streams, gliding calmly in the midst. The crops, especially grass and oats, were heavy; corn was as far advanced as in the Merrimack valley, though of a smaller variety. There were immense fields of potatoes along the line of our travel, as this is the great starch-making region of the State. Everywhere were acres upon acres of this important vegetable covering the ground with its foliage. It is the practice,

we found, in all this region to plant much more closely than we are accustomed to do in the south part of the State. This is not on the theory that the potato grows best in the shade, as has been contended, but rather on the practical experience that this soil is so well adapted to the crop that it will sustain all that may be put upon it. Crops of three or four hundred bushels per acre are a common result. Wheat is not often seen, rye never, barley seldom. There are now and then fields or patches of India wheat, a hop yard or two, and some very fine gardens. There is no fruit in Coos county to be named except currants, Canada plums and the common wild berries.

The third day of the most extensive excursion ever taken in our State commenced with clouded skies and falling rain. But undisturbed by the inclemency of the weather, the party left Canaan and West Stewartstown and were soon rejoicing in fair weather just cool enough for comfort, with no annoyance of dust. We dashed down steep hills, through mountain defiles, and over level plains, or pushed with firm tread our way up rough acclivities, and by the sides of flowing streams, on and up toward the objective point contemplated — the beautiful wood-skirted and mountain encircled Lake Connecticut.

Two miles out from Canaan we crossed Hall's Stream, which, for a short distance separates us from the Green Mountain State and empties into the Connecticut near the northwest corner of Clarksville. Again we follow the Connecticut into Pittsburg, in which we drive nearly fifteen miles and scarcely pass half through its territory.

The scenes are those of grandeur and beauty, wild, picturesque and charming. Such magnificent meadows, such immense forests, such pure crystal streams, such solid roads are not found anywhere in New England except in the very northern portion of our Granite State. Here are better tilled farms, richer and more productive fields, neater and more cheerful homes than are found in many towns in the long-time settled portions of the State.

We pressed on, passing now and then bright oases in the wilderness, where industry and intelligence had laden the fields with a coming harvest, which the farmers of the productive West might envy.

Our party climbed lofty hills and rolled fearfully down terrific winding hillside paths, moved onward by the tortuous river and

its fresh meadows, until at length we halted on the very shores of the lake, at the door of Lakeside Hotel.

The party returned in the afternoon to Colebrook, and the next morning those who were resolved to ride it out on this line if it took the whole summer directed their faces up the "Mohawk" valley, out beyond the limits of settlements and into the wide chasm which nature, in some terrific convulsion, suffered long before the world was trodden by human foot.

For the first few miles we passed through a fresh and fertile region, laden with bountiful harvests of grass and grain, and immense areas of other rural products. Mile by mile the soil became more thin and moist, and the grass fields less productive, until only a few potato lots and infrequent fields of India wheat had been coaxed to a decent growth by the hand of cultivation. The woods became dark and lonely, and even the song of birds was seldom heard. We passed up the solid, solemn avenue and looked up with awe on the walls that towered hundreds of feet above us, like mighty castles built by giants, long before man had laid the corner-stone of temples or of palaces. We did not delay long at their base nor attempt to scale their walls, but reaching the high point on the highway which passes through the august chasm, and which divides the springs, sending a due portion to the west and another to the east, we pressed on to the profile of the old Roman on the right, who reclines on his couch of stone and remains unmoved by summer's heats and winter's tempests. Beyond this point are the cascade, a flume of no slight regard, and a spring of pure water, icy cold; and beyond them all, an opening for a limited space that is soon closed by an extended region of woods reaching into the Pine Tree State.

We could not tarry long, for the duties assumed in accepting the invitation to the excursion were many and imperative and must not be neglected. We hastened back to civilization over the old hill roads, which commanded a splendid view of the rich farms of Stewartstown and the magnificent mountains on the Vermont border.

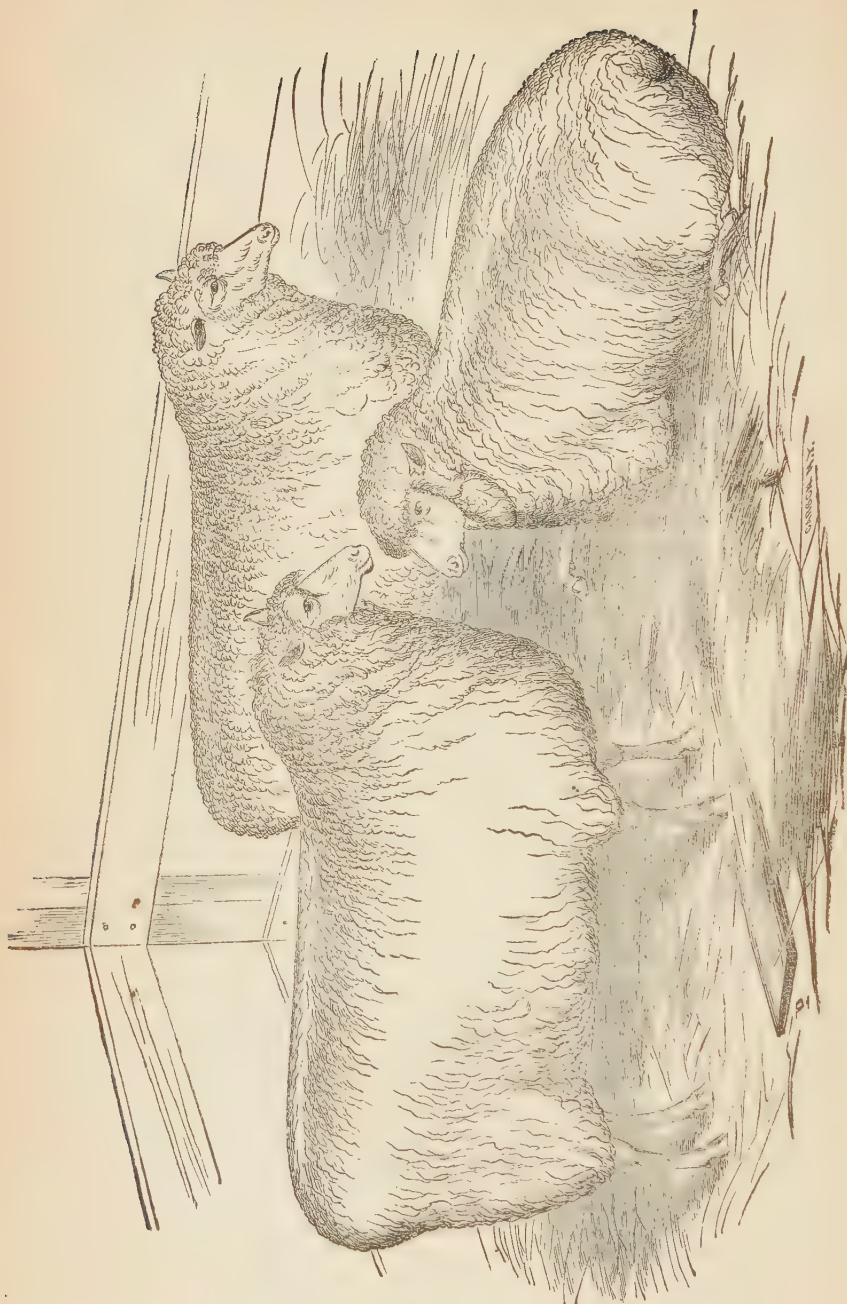
The close of the fourth day found the party resting in the beautiful county town of Lower Coos. We had traced the Connecticut to a near proximity to its source, seen the beauty of meadow and hill and wood, and the grand and sublime scenery of the extreme northern portion of our State, seldom visited even by New Hampshire men, and the work was not yet done.

The mountains were yet unvisited, and two days were before us and most faithfully devoted to that wild section which lay between Littleton and the summit of Mount Washington. But, though full of interest, the agricultural features were not of sufficient interest to claim more space in our report.

During this extended excursion of three hundred and eighty miles by rail, and one hundred and fifty by horse power, Mr. Lyon, the head of the Montreal Railroad, foresaw and provided for every emergency, and none are too great for his tact and energy. He is a power in the development of our State, and if life and health are spared him, in another decade he will open to a rich and abundant market the natural and manufactured products of Northern New Hampshire, and utilize the now profitless material resources of the State.



COTSWOLD BUCK.



COTSWOLD EWES.

CO-OPERATIVE ASSOCIATIONS.

The Board of Agriculture was organized for the benefit of the farming interest in the State, and in all the work which we have undertaken, that has been kept constantly in view. We are under an obligation to engage in every public enterprise which contributes to that end. We are ready to join hands with all organizations which have the same object to accomplish. We oppose none, but make a common work with all in this great interest of agriculture. Holding no public exhibitions, we recommend annual fairs of State, county, and town societies, and do all that can be reasonably required of us to induce liberal shows of stock, farm products, and mechanical skill; we visit the various fairs in our vicinity which are sustained by any agricultural organization; we participate in discussions whenever held by these associations, and regard it as especially within our field of labor to encourage the institution and support of farmers' clubs.

In order to make a complete record of the farming movements of the State, year by year, and thus present a correct history of our New Hampshire agriculture, it becomes necessary to give a general report of the transactions of these associations.

THE NEW ENGLAND SOCIETY.

The officers of this society for the current year, are

President — George B. Loring, Salem, Mass.

Secretary — Daniel Needham, Boston, Mass.

Treasurer — George W. Riddle, Manchester, N. H.

The other officers from our State are

Vice President — Hon. Frederick Smyth of Manchester.

Trustees — D. H. Goodell of Antrim; Warren Brown of Hampton Falls; Charles Williams of Manchester; George A. Pillsbury

of Concord; Greenleaf Clark of Atkinson; Natt Head of Hooksett; Samuel C. Fisher of Dover; Peter W. Jones of Amherst; Chester Pike of Cornish.

The annual fair was held at Lowell the first week in September. Visits to all departments led us to say that the show did not in many respects excel those of former years. The number of horses was very large, greater than at any previous exhibition. The neat stock presented a large representation of the various breeds, but in quality was not superior to the entries of preceding years.

The sheep were excellent; swine good, but very limited; poultry, fair.

In the halls we found a gorgeous display of flowers, a broad extent of fruit, which had few extra specimens, and a respectable representation of vegetable productions; but in the department of mechanical work and manufactures there was a deficiency that was not creditable to the skill and enterprise of New England.

The great feature of the exhibition was the horses and the races. There is no questioning the popular taste; say what people will, horses draw the crowd and bring the funds to help along the fair.

Of the New Hampshire contributors were Page and Philbrick of Weare, Robert and H. M. Elwell of Langdon, Ward Parker of Merrimack, J. B. Sanborn of East Concord, Arthur Clough of Canterbury, M. H. Johnson of Weare, Isaac Woodbury of Salem, Hayes and Son of Portsmouth, J. S. Emery of Wolfeboro, and Frank Jones of Portsmouth, each making entries in the department of neat stock, and taking their share of the awards.

The horses from our State were presented by R. D. Kimball of Dover, George F. Walker of Newmarket, Lewis T. Sanborn of Hampton Falls, Charles Townsend of Bedford, Jas. Sleeper of Concord, A. Churchill of Exeter, E. S. Colby of Hollis, D. D. Perkins of Newmarket, Calvin Dudley of Nashua, James Carey of Manchester, George W. Wales of Concord, F. H. Lyford of Hampton, D. A. Brown of Fisherville, W. F. Locke of Franklin, A. Beard of Nashua, J. M. Reed of Keene, C. R. Cass of Concord, B. M. Prescott of Franklin, H. G. Smith of Concord, A. J. Sherburne of Pittsfield, E. S. Mosher of Keene, W. H. Ray of Manchester, W. H. Moody of Fisherville, M. J. Sherman of Keene, S. Follansbee of Concord, George Williams of Nashua, A. C. Wallace of Manchester, J. D. Stott of Newmarket, M. Eldridge of Portsmouth.

J. B. Sanborn of Concord made an exhibition of sheep, and J.

T. Hoyt of the same place a show of swine. Other departments were fairly, though not largely represented by New Hampshire.

The receipts from all sources at the fair, were \$31,250.50, being a larger sum than was ever before received at any single fair held by the Society. The premiums and expenses paid amounted to \$25,189.06, leaving a profit of \$6,061.44 of which \$3,500 was paid to the North Middlesex Agricultural Society, including \$500 allowed for extra expenses, and the balance of \$2,561.44 was paid into the Treasury of the New England Society. The amount in the hands of the treasurer at the beginning of the year was \$3,588.53; amount received from various sources, \$3,329.44; making a total of \$6,917.97. Whole amount expended, \$1,257.25; leaving a balance in the treasury of \$5,660.72, which is on deposit and drawing interest.

The following report has been presented by Hon. Daniel Needham of Boston, the efficient Secretary:—

The ninth annual fair of the New England Agricultural Society, was held in Lowell, Mass., on the third, fourth, fifth, and sixth days of September, 1872. The previous fair of the Society was also held at Lowell; but the general prevalence of small pox in that city, during the autumn of 1871, prevented a large number of persons from attending the fair as exhibitors and visitors, who otherwise would have been present. The society held its fair of 1872, in connection with the North Middlesex Agricultural Society; it having been the custom of the New England Society to join hands with the local Agricultural Society in the holding of its fairs wherever they are located.

The officers of the society consisted of Geo. B. Loring of Salem, Mass., President; Geo. W. Riddle of Manchester, N. H., Treasurer, and Daniel Needham of Boston, Mass., Secretary. These officers were assisted in the discharge of their various duties, by E. M. Read, President of the Middlesex North Society, E. T. Rowell, Secretary, who was also Assistant Secretary of the New England Society, and L. J. Eames, Treasurer.

The entries of articles and animals for exhibition began at an early day; and before the time of opening, every pen erected for cattle, sheep, and swine, and every stall designed for horses, were engaged.

The amount of premiums offered was ten thousand dollars; and the classes embraced in the premium list included every established breed of cattle, sheep, and swine.

The Society took unusual pains to thoroughly advertise the fair. No less than ten thousand books containing the premiums offered were published and bound and distributed through the mails; whilst sixty thousand sheets of posters and other notices were distributed in the railway trains, by express and mail, and by voluntary effort on the part of the friends and members of the society. No exhibition was ever more thoroughly advertised; the press throughout New England voluntarily calling, in editorials of greater or less length, especial attention to the fair.

The president of the society, in accordance with established custom, delivered the opening address, congratulating the society upon the promised success.

There were eighty-eight entries of Short-horns from Vermont, New Hampshire, Massachusetts and Rhode Island.

There were fifty-nine entries of Devons, all from New Hampshire and Massachusetts.

There were sixty-two entries of Ayrshires, all from New Hampshire and Massachusetts.

There were thirty-one entries of Herefords, all from Maine and New Hampshire.

There were sixteen entries of Jerseys, all from Massachusetts and Rhode Island.

There were twenty entries of Holstein, all from Massachusetts.

There were twenty-nine entries of grades from Maine, New Hampshire, Massachusetts and Rhode Island.

There were fifty-one entries of stallions, representing all the New England States.

There were seventy entries of mares, and these were gathered from all the New England States.

There were one hundred and seventy-two entries of sheep — twenty-eight of swine and two hundred of poultry.

In agricultural implements the exhibition was very large — one enormous tent and considerable other space being devoted to this department.

Agricultural productions, fruits and flowers, each being a department by itself, were well represented; but the exhibition in these departments was not equal to the exhibition made by the society on some previous occasions.

The exhibition, as a whole, however, was ahead of previous ones; and the attendance of visitors was unparalleled. On the third day of the fair no less than sixty-five thousand people were

on the ground ; and the estimated number present on the second day was in excess of forty thousand.

The amount of money taken during the fair was over thirty thousand dollars ; and the amount of profit after paying all premiums and expenses, was six thousand dollars ; one half of which was given to the Middlesex North Society and the other added to the surplus account of the New England Society.

In the evenings of the first three days of the fair, farmers' meetings (in which New Hampshire men took a prominent part) were held at one of the large halls in Lowell. These meetings were well attended, and interesting and valuable discussions were entered into upon grasses and other agricultural subjects. The farmers' meetings have always been a leading feature of the New England Fair, and the ablest and best educated agriculturists of the New England States have taken part in them. At these meetings the leading breeders and agriculturists of New England are brought together and not only learn each other's names but views upon the great questions involved in agricultural enterprises. This acquaintance of men in Maine and the other New England States with men of all the States comprising our New England group, has been of inestimable value, not only financially but in the light of the vital questions of political economy.

The fair had four successive pleasant days and was a success throughout, of which New Hampshire, as one of the six sister States and as one of the largest contributors to this grand show, may well be proud. Like the preceding fairs of the New England Agricultural Society, this ninth exhibition was an honor to New England, a credit to the officers of the Society, a profitable enterprise to the exhibitors and contributors, and a most valuable school for study for the public who attended or read of its results.

NEW HAMPSHIRE STATE SOCIETY.

The officers for the current year are nearly the same as for several years past.

President — Natt Head, Hooksett.

Secretary — Aaron Young, Portsmouth.

Treasurer — George W. Riddle, Manchester.

Directors — Warren F. Daniell, Franklin ; Peter W. Jones, Amherst ; James W. Cogswell, Gilmanton ; Charles H. Hayes, Portsmouth ; Stephen S. Chick, Somersworth ; Nathan R. Per-

kins, Jefferson; Noah W. Hardy, Nelson; Moses D. Page, Dover; Peter Kimball, Grafton.

The presidents of county societies are vice presidents of the State society.

The eighteenth fair of the society was held at Dover, on the first week in October. In consequence of rain, the presentation of stock, farm implements and products of the soil was not a fair average entered at the State Fair, though on the second day important additions were made to several departments.

The horses, though well represented, were not the great feature of the fair, and were not as numerous as in some other years.

Among those which appeared on the track were stallions Fearnaught Prince, Frank Jones, Portsmouth; Defiance, Hoyt Brothers, Grafton; John G. Saxe, G. F. Walker, Newmarket; Young Draco, Stephen Meader, Durham; Count Rumford, George Silver, Suncook; Mambrino Chief, R. D. Kimball, Dover; Ned Wallace, A. C. Wallace, Manchester.

The leading mares were Lady Williams, G. W. Wales, Concord; Arthabaska, G. M. Stevens, Lancaster; Jean Ingelow, F. M. Wetherbee, Alstead; Nellie Morrison, W. H. Moody, Fisherville; Belle Dean, H. G. Smith, Concord.

One of the most valuable departments of the show was that of working oxen, especially the town-team parade and the trials of strength and skill in pulling. The pulling match drew a crowd which left their seats at the horse trots, while the magnificent oxen present were constantly surrounded by men and women in great numbers. There were three teams, of ten yokes each, of selected cattle from the towns of Durham, Rollinsford and Dover, which came upon the ground drawing wagons laden with products of the soil, emblems of industry and farmers' families. Those from Durham were majestic animals, weighing 5000 pounds, and over, per pair, carefully matched and fully trained. General Hoitt was at the head and owned some of the heaviest ones. Those from Rollinsford were not to our eye inferior, though possibly not quite as heavy. The Dover team was lighter, but manifested more pluck and carried their heads more gallantly. The committee possibly thought they put on city airs, and therefore awarded the premiums,—to Rollinsford, \$25; Durham, \$15; and Dover, \$10; with \$5 each for wagons. General Hoitt was awarded \$15 for the best farm team.

The pulling awards were made to Alfred Colby of Fisherville,

\$12; N. F. Ricker of Rollinsford, \$8; John B. Sanborn of East Concord, \$5, and \$5 gratuity for a trial with a pair of steers. Mr. Sanborn was the originator of the match, and meant of course to win, but one of his best oxen was slightly lamed, and he failed to be successful.

In the neat stock department the Devons prevailed very largely and made a good show. The three large entries were by Ward Parker of Merrimack, John B. Sanborn of East Concord and George F. Beede of Fremont. The herds numbered over fifty animals, and some of them were very fine.

There were other Devons, presented by various parties, but only in small numbers.

The Ayrshire pure-bloods were nearly all the property of Hayes & Sons of Portsmouth. They had twelve head, including "Old Tom," a fine bull, several cows and young animals.

In the Short-Horn pens we missed Elwell's nice animals, and found nothing to supply the deficiency. The two leading animals were the Rockingham County farm bull calf, and a yearling bull owned by Charles W. Tilton of Kensington. There were some fine animals in the Short-Horn line, owned by the Robertses of Rollinsford, but as they had no pedigree they were classed with grades.

The Swiss herd of H. W. Clarke of Belmont, Mass., was a great attraction and aided greatly in filling empty pens.

The Herefords are a new thing at our fairs, and Mr. Arthur Clough who exhibited them, deserves well of the public for his interest in them. He had a herd present, and during the fair, added one or two by purchase. His are from the Cochrane stock at Compton, Canada.

Jerseys were represented by various parties, but only by single entries or in couplets. Among them were Daniel Farmer, Manchester, a two-year-old bull; S. C. Fisher of Dover, the Pages of Dover, W. T. Wentworth of Dover, Harrison Haley, J. B. Spaulding, J. T. Hoitt of East Concord, and Ephraim Pickering.

Only three or four full-blood Dutch cattle were found on the ground,—the best ones a cow by H. Haley, and a heifer by J. S. Hussey.

The only swine on the ground were the nice little compact Berkshires, owned by J. T. Hoitt of East Concord, which, notwithstanding their blackness, were favorites.

The sheep show was not large. We noticed entries by J. B.

Durrell of Gilmanton, John B. Sanborn of Concord, C. E. Plumer of Gilmanton, D. O. Cate of Rollinsford, and S. C. Gerrish of Madbury.

Of poultry, there was a fair representation, to which the chief contributors were W. T. Evans of Manchester, D. F. Meader of Dover, Asa S. Baker of Dover, Ephraim Pickering, Frank P. Waldron, Geo. O. Woods, J. T. Hoitt, and John B. Sanborn.

The other departments of the fair were not marked by any excellence that entitled them to special remark.

There were several spirited trots which afforded gratification to the crowd, but are not of sufficient importance to be recorded here.

There were evening meetings for discussion, which were conducted by the officers of the society, and participated in by the President, Col. George F. Wilson of Providence, Messrs. Adams, Roberts, Mason and Lawrence of the Board of Agriculture; Dr. Stackpole, D. H. Goodell, Warren Brown, and many other gentlemen.

The fair as a whole was a success, if money makes it successful, and was in point of agricultural merit all that under the circumstances could be expected.

The total receipts were put down at \$8,120, against \$9,882 last year. The expenses and awards are ascertained to be about \$6,500, against \$9,470 last year. The amount of funds in the treasury at the annual meeting in December was \$2,380.52, as reported by Hon. Warren Brown, auditor.

The society has not, during the past year, according to a long practice, held a meeting for discussion, nor did it hold a union session with the Board of Agriculture as on a previous occasion. Its only meetings were those at the time of the fair, its annual meeting for the choice of officers, which is never fully attended except when held in connection with a mass meeting, and one, not largely attended, held with the view of determining the times of holding the several fairs in the State, so as to avoid conflicting with each other.

CONNECTICUT RIVER VALLEY SOCIETY.

This prosperous agricultural society that embraces the broad valley of the Connecticut which lies in our State and Vermont excites a beneficial influence in the western counties and may partly be considered in our New Hampshire agriculture. Its officers are —

President — Chester Pike, Cornish.

Vice Presidents — one from each county in limits of the society.

Secretary — D. E. Willard, Orford.

Treasurer — Charles W. Pierce, Orford.

Executive Committee — Samuel Craft of West Lebanon; Alex. McLane of Fairlee, Vt.; E. J. Tenney of Claremont.

The managers usually have the misfortune of suffering from storms at the time of their fairs. They were by no means exempt at their exhibition at Claremont on the third week in September. They had made liberal arrangements; had the best grounds in the State, with an ample supply of stalls, pens and other fixtures. They were easily accessible by rail, the Sugar River road passing close by the borders of the enclosure. They had given wide publicity of their intentions, and had offered generous premiums. The rain interrupted their plans and caused a great disappointment.

In no single one of the departments was the show large. That of cattle was the largest and by far the finest. While there was not a great number of horses on exhibition, there were some excellent ones in each class. The show of sheep, swine and poultry was very meagre, and the same is true of the manufactures, fancy, vegetable and fruit departments. A part of this lack may justly be attributed to the severe rain of the first day, while the balance must be set down to the want of interest in the worthy legitimate objects of the society.

The exhibitors of New Hampshire stock were the Elwells of Langdon, Crafts of West Lebanon, Ide of Claremont, and Pike of Cornish. The sheep were mainly from Vermont and were good in quality.

The horse trots were the great features of the show, and on the best days they called out a large attendance of people.

There is no reason why this society may not equal in effectiveness either the Vermont or New Hampshire State societies. It covers a productive section of both States, and even numbers in its field more herds of good cattle, more good horses and better sheep than other parts of the State. Its fair this year is to be held on the second week in September.

ROCKINGHAM COUNTY ORGANIZATIONS.

This county which often took the lead in agricultural prosperity and in successful fairs is now left without a county agricultural organization. It has however as many local associations in active operation as any of the other counties. In recording the agricultural transactions in that county it was customary to commence with the doings of the "Rockingham Fair," and subsequently to give attention to the spirited efforts to sustain the Piscataqua Society. But these have made no public record the past year, and may be regarded as institutions of the past. We look to town associations as our auxiliaries in that county.

THE EXETER AGRICULTURAL AND HORTICULTURAL SOCIETY.

President — D. Frank Hayes.

Vice-Presidents — John J. Bell, Lyford Connor.

Secretary — Chas W. Treadwell.

Treasurer — Gardner Gilman.

Trustees — Jacob P. Cilley, William M. Hunnewell, Hezekiah Scammon, Charles Burley, Nathaniel Gordon, Hervey Kent, B. F. Robinson.

This association held a profitable exhibition of fruits and vegetable productions last year, and during the winter months engaged in the discussion of important questions connected with the cultivation of the soil. We have no reports either of the show or of these discussions. A paper read at one meeting by Mr. Treadwell, the Secretary, is here copied and commended to those who desire to see the advantage of subsoiling.

MR. TREADWELL'S PAPER.

If you have but one team, plow one furrow round the field, or such portion of it as you wish to plow; then hitch to the subsoil plow, and go round again in the same furrow, unless you are furnished with a subsoiling attachment to the ordinary plow, such as was introduced to the farmers of this vicinity some little time since, by Mr. Jacob P. Cilley, in which case increasing the strength of your team somewhat, you will be enabled to effect pretty near the same object as with the two single teams. As the subsoiler does not raise the earth to the top, but only pulverizes it

where it lies, it can be safely run as deep as your team can draw it. A span of horses or a yoke of oxen will draw a subsoiler from eight to fourteen inches deeper than the first cut. In preparing orchard grounds the subsoiler is often run from eighteen to twenty inches deeper than the first cut. When your plow cuts a wide furrow the subsoiler should be run twice in the same furrow. It is all the better if you use the subsoiler also in cross plowing. Subsoiling in this way for two or three years, will mellow the ground from fourteen to eighteen inches deep, and the subsoil may then, a little at a time, be thrown to the surface. In subsoiling, don't forget to keep a sharp eye on your plow for fear of hidden obstructions. It is of little use to subsoil wet and heavy lands until they have been underdrained.

Many valuable acres would be added to our farms if we would underdrain and subsoil these lands, at much less expense than to buy new acres. Underdrain as soon as possible, but until your drains are completed, plow your wet lands up and down the slope, in narrow divisions, sixteen to twenty feet wide, — not with flat furrow slices, which give the land no chance to drain, but with lapped furrows. After these divisions are completed, run the plow as deep as your team can draw it through the middle furrows, then, with a round-pointed shovel, throw out the loose dirt from them, and you have free channels for the surplus water to run off. It is not so much extra work as it seems, and will abundantly pay.

The objects of plowing are, to pulverize the soil, to mingle the different portions, to kill the weeds, to cover manures, and to keep the surface open and fresh. The plowing that accomplishes these objects best, is the best plowing. Pulverizing being the most important, that system of plowing which pulverizes most thoroughly and the deepest, is the best. Gardeners understand this, and where they wish to raise fine vegetables and plants, they work the soils thoroughly and deep. Do the same on your farms. If you have been plowing five or six acres four to six or eight inches deep, make it ten or twelve acres by doubling the depth of your plowing; it is better and cheaper than to buy ten acres. It is less work to raise thirty bushels from one acre than from two or three. We do not mean by this that eight inches of the subsoil is to be turned to the surface, but that it is to be stirred up and broken where it lies, by means of subsoil plowing. If done with the common plow, the change from shallow to deep plowing would

have to be gradual, as it would not do to throw more than an inch or so of the subsoil to the surface at a time, but even by deepening one or two inches each year, an entire change would soon be effected in the productiveness of our fields. Stronger teams and implements will be needed, but the increase of our crops will soon compensate for the outlay. Nearly every farmer in the country has a new farm under the old one, and if the desire for *more* land could be changed to a desire for *deeper* land, the number of acres under cultivation would soon be doubled. Root crops especially need deep culture. Those who plow six or eight inches and never subsoil, have but little idea of the size to which carrots, beets, turnips, etc., will attain, when they have room to reach down. Try it!

There are two kinds of deep plowing: trench plowing and subsoiling; the former often fails where the latter would succeed. Trench plowing is deep plowing and turning the subsoil to the surface. This subsoil is often hard, cold, and wet, and takes two or three seasons of manuring and cultivating to render it productive. It is this kind of deep plowing which many have tried and condemned, for the reason above stated. But subsoiling is deep plowing and pulverizing and stirring up the subsoil, without raising it to the surface; this is always beneficial, except in the case of a very few sandy soils, with no basis of clay subsoil. Running a subsoil lifting plow in the bottom of drills, to which manure is to be applied for root crops, and between the rows in the after cultivation, is frequently of great benefit. Many of the farmers of this town will remember seeing the well-trained bull "Roger Sherman" exercising in this manner between rows of beets, potatoes, etc., and drawing the subsoiler to the *beam* with perfect ease, and with manifest advantage to the crop in every instance.

DERRY AGRICULTURAL SOCIETY.

The farmers of Derry maintain a first-class town society, and make a profitable exhibition annually. They have usually held winter meetings for discussion, but have neglected this important feature during the past winter. The officers of the society are—

President—Harvey P. Hood.

Vice Presidents—Joseph Montgomery, N. H. Brown, H. R. Underhill, William W. Poor.

Treasurer and Secretary—George W. Barker.

Executive Committee — Israel G. Goodwin, W. S. Leland, Thomas P. Major, George W. Dickey, Gayton P. Reynolds, Charles G. Johnson, John L. Fletcher, William O. Noyes.

The number of members, 106; amount paid out in premiums, \$154.

The annual fair was held at the old town hall on the 9th of October. In doors there were not so many contributions as last year, but still a liberal display, allowing a more convenient arrangement both for exhibitors and visitors.

The fruit show was an admirable one, equal to those at most of the large fairs.

The show of vegetables was not equal to that of last year, but had many fine specimens, showing what Derry soil can produce.

There was a large space occupied by the dairy and samples of bread made in the kitchens of old Derry.

The miscellaneous department was fair, not overcrowded as it was at the first fair of the association.

The out-door part of the exhibition was the most important this year. The weather was most favorable, being just such as called out many people and made every one feel happy.

Of horses for farm and family use there was a large number. There was no trotting course, and horses were judged from their appearance in harness without trials of speed.

There was some strong pulling by horses at a drag, both singly and by pairs. The pulling by oxen was a great feature in the show. Stones weighed and marked to the amount of four thousand six hundred pounds were placed on a drag, or "stone boat," and used as a test.

The working oxen on the ground were excellent; if not as large in many cases as we have seen, they could not easily be surpassed in beauty.

Exhibitions of other neat stock were numerous, and the animals generally were excellent.

As a whole the fair was a success, and was well attended by citizens of Derry, Londonderry, Hampstead, Chester, Auburn, Salem, Manchester, and other towns.

A substantial dinner was served close by, and the best of social courtesies prevailed. A meeting was held in the evening, but we felt compelled to leave, and therefore lost the entertainment which others enjoyed.

There was not only an admittance to the exhibition hall, but speaking by various gentlemen of the town and from abroad.

CHESTER TOWN AGRICULTURAL SOCIETY.

Chester is a lively competitor with Derry for agricultural commendation. It has an older society and has had more time to make progress.

The officers of the society according to our record are —

President — James R. Gordon.

Secretary — R. H. Mitchell.

Treasurer — J. A. Hook.

The seventh annual fair of the Chester Agricultural Society was held on Thursday, September 26. A rainy morning with occasional showers during the day prevented exhibitors from bringing the usual quantity of products, although the quality was fully equal to previous years.

About thirty yoke of oxen were present to compete for premiums. The exhibition of other stock was small, owing to the unfavorable weather.

The show of fruit was very fine, and places Chester in the front rank as one of the best fruit-producing towns in New Hampshire.

The show of vegetables was rather meagre in quantity, but fair in quality.

There was a very fair exhibition of trace corn, mostly of good quality and large size, the trace exhibited by S. F. Learned being particularly noticeable.

The show in the dairy department was small, with the exception of a fine display of cheese by Mrs. Edwin Haselton.

There was an excellent exhibition of cut flowers and house plants, and some very fine products of the ladies' skill in ornamental and useful articles, but the quantity was much less than usual.

Bond's Band of Boston furnished excellent music during the day and evening. In the afternoon there was a large attendance, and during the evening the hall was comfortably crowded, although the rain prevented many from being present.

Remarks were made by Dr. J. F. Brown, Capt. S. F. Learned and S. S. Chamberlain of Chester, Stephen Holt of Epping, and Capt. N. H. Brown of Derry.

EPPING FARMERS' CLUB.

Formerly this has been an active institution, and is now capable of making itself felt throughout the state. Its officers are —

President — George N. Shepherd.

Vice President — N. G. Plummer.

Secretary — W. L. Plummer.

Corresponding Secretary — D. W. Nason.

KENSINGTON FARMERS' CLUB.

One of the best farmers' clubs in the State is that at Kensington. The members have held regular meetings for discussion during the winter and furnished much practical information by the manner in which they have conducted their exercises. The officers are —

President — Weare N. Shaw.

Vice Presidents — Joseph Poor, Stephen Green, F. K. Mace.

Secretary — Joseph W. Brown.

Treasurer — Cyrus D. Wadleigh.

RYE FARMERS' CLUB.

The farmers of Rye maintained a club during the winter.

President — E. B. Philbrick.

Secretary — E. C. Jenness.

DEERFIELD FARMERS' CLUB.

The Deerfield club is a vigorous one, and has from year to year made a favorable impression by its discussions. We have no official record of its management.

STRAFFORD COUNTY ORGANIZATION.

Strafford county, though small in territorial extent, has the material for more agricultural organizations. Nearly every town might well sustain a club and make an annual fair. It has, however, but two or three farmers' clubs and but one agricultural society.

STRAFFORD COUNTY SOCIETY.

The County Society which has been an active and prosperous one, did not hold a fair in 1872, on account of the holding of the State Fair in that county which absorbed the entire interest. It will hold an exhibition September 23, which will continue four days.

The officers of the society the present year are —

President — John S. Haines, Somersworth.

Vice-Presidents — Elisha Locke, Barrington; Luther Hayes, Milton.

Treasurer — Ira S. Ricker, New Durham.

Secretary — Ezra H. Twombly, Dover.

Directors — Col. Daniel Hall, Charles H. Trickey, Dover; Stephen S. Chick, John S. Haines, Somersworth; Charles S. Whitehouse, Joseph Nutter, Rochester; N. G. Davis, Lee; Ira A. Locke, Madbury; William F. Jones, Durham; John F. Cloutman, Farmington; Ira S. Ricker, New Durham; Robert B. Peavey, Strafford; Elisha Locke, Barrington; A. G. Orne, Middleton; David O. Cate, Rollinsford.

It is the intention of the society to hold a fair this fall which will be superior to any ever held in this county.

ROLLINSFORD FARMERS' CLUB.

This club has been maintained for another year, though some personal sacrifice was required to make it efficient. The Secretary is J. D. Roberts. We have no further report of its officers.

DOVER AND ROCHESTER UNION CLUBS.

President — Joseph N. Hayes.

Vice Presidents — Samuel K. Pickering, Charles Clark, Joseph W. Bennett, James F. Horne.

Recording Secretary — Hiram S. Osborn.

Corresponding Secretary — James M. Hayes.

Treasurer — Moses Meader.

Executive Committee — Charles Clark, William J. Chesley, John W. Hall, Hiram Corson, H. S. Osborn, G. H. Varney, Stephen Jenness.

This club has been organized one year and has a membership of forty. It has for its object the discussion of all subjects per-

taining to the interests of the farmer, and the improvement of agriculture. During the past season, among other subjects discussed, have been the following: The best method of feeding stock; What is the best rotation of crops; Manures, their manufactures, preservation and application; Fruit culture; Does book farming pay.

Several members of the Board met with the club for an afternoon and evening meeting. The farmers were out in good numbers, and with them their wives and daughters. The young men were fully represented. The section embraced in the limits of the organization constitutes one of the best farming localities in Strafford county, and is occupied by a class of well-to-do and intelligent farmers.

After the preliminaries of opening the meeting, the President of the club introduced Judge Roberts, who discussed the subject of

RENOVATING PASTURES.

He spoke of the present worn and depreciated condition of pastures. He thought pure and abundant water was greatly needed, in order to produce health in the animals grazing our pastures, though sometimes there is too much water, when drainage should be resorted to; should lands be in wood half the time for a century the product would be as great as now. If wood growth did not restore the fertility it would go a great way towards it. Plowing should be practiced, and small, scattered trees and shrubs should be removed; ashes should be applied. We need in sowing down a large variety of grasses. The restoration of our pastures will save our farms.

Judge Roberts presented several other points, and closed with an earnest exhortation to put forth the effort and save our grazing lands from further depreciation.

Mr. H. S. Osborne approved Mr. Roberts's remarks, and referred to a tract of his land from which the growth had been cut, and said it produced little besides brakes. He desired to know what to do with it.

Mr. Roberts said if it was wet drain it; if not, mow off the brakes.

Mr. Charles Clark, who has seen much of the world, (and we venture to say has never traveled with his eyes shut), said men

complained of the want of time to look after their pastures, but he noticed such men had time enough to go to shows and "agricultural horse trots." They must take time. Our pastures are sources of our salvations, and we must take care of them. He had hired pasturage, but he had made up his mind to take care of his pastures and hire no more stock pastured.

Mr. W. J. Chesley thought Mr. Osborne's brakes would yield to the plow, and his best way would be to remove the stumps and put in the plow. He related Governor Hill's experiment in feeding down winter rye for three years, the fourth yielding a good crop. He related successful experiments in ditching, in removing pines, alders and other bushes. Cut alders on the dark of the moon in August and there will be no trouble.

The Secretary occupied a little time in referring to the importance of abandoning our roughest pastures to wood, applying bone-dust and other top-dressing, keeping sheep, soiling, etc.

After a short time more in discussing the pasture question, Mr. Adams gave an address on the way to be saved as farmers, which we only mention, as it will be repeated at other clubs.

Judge Roberts commented on the talk of the Secretary, and desired to impress its teachings on every mind. A similar expression was made by Mr. Chesley, Mr. Osborne, and others.

In the evening Mr. Lawrence gave his address on the saving of manures, which led to a full and earnest discussion. This club is one of the best organized associations in the State.

STRAFFORD TOWN FAIR.

According to custom the people of Strafford held a town fair and made a good display of cattle and farm productions. We have no report. Officers:

President — R. B. Peavey.

Secretary — Dr. Frank Murphy.

Durham organized a club a year ago, but no evidence has been furnished that it is still alive.

CARROLL COUNTY ORGANIZATION.

Carroll county, which contains some of the best farms in the State, has never maintained a county agricultural association nor held county fairs. But there are a few town clubs and there have been occasionally local fairs. A newspaper correspondent reports a town fair which was held last October in the town of Freedom. The writer says:

"Our town has again resumed its annual cattle show, which the famous 'bell war' case, that occasioned such an uprising and division among our people a few years since, had interrupted for several years.

"On Thursday, 17th ult., the cattle were gathered into line on the fair ground east of the village for inspection. There was not so large a number of teams as formerly, but enough were there to make a very good show of the working force of cattle in town, that being the only class on exhibition. The trial of strength of oxen was engaged in, after the nice, sleek oxen and steers had had their share of attention from those who came to see the show, as well as the man who gave them a careful inspection for premium. As usual, at such gatherings, the affair ended with a horse trot. Premiums are to be given to the best district team of oxen, and also to the best single yoke; as, likewise, to the yoke of oxen that pulled a hooded drag of stone the best."

There were several good town organizations in the county but recently, such as the farmers' club of Moultonborough, that of Wolfeborough, Conway and Tuftonborough, but we have no reports from them the present year.

BELKNAP COUNTY ORGANIZATION.

There is but little to record of this county. It has very limited advantages for affording the farmers the means of improvement socially or intellectually. The old Belknap Society disbanded years ago, and the Union Society of Alton, Barnstead and Gilmanston was inoperative last year. There are few farmers' clubs like those at Sanbornton and Meredith, but they are not effective of any marked results. It is reported that the Belknap County Society is to be resuscitated. If this should be done, new life may be given to the farming interests of the county.

MERRIMACK COUNTY ORGANIZATION.

The officers of the Merrimack County Society are —

President — Aaron Whittemore of Pembroke.

Vice President — C. H. Carpenter of Chichester.

Secretary — Walter A. Webster of Concord.

Treasurer — John C. Webster of Concord.

The Board of Directors consists of thirty-one, one from each town and ward in the county.

Merrimack County is one in her agricultural fairs. Other counties have a plurality of exhibitions or none. Rockingham has had two annually for many years, and of late has doubled that number. Hillsborough, Cheshire, Grafton and Coos have made double expositions. While for a few years past several counties have done nothing, Merrimack has been united in a show. Her location and railroad facilities are such as to bring people to a common centre at Concord.

For fifty years, lacking one, have the farmers of that county met for a cattle show and fair, and that takes us back to the origin of the county. Merrimack county has always, therefore, maintained a fair. It has sometimes been small and funds have been scarce, but the institution has lived, and is now flourishing, with a good fair ground and a reasonable degree of prosperity.

The forty-ninth exhibition opened on Tuesday, September 24. We found a great show of horses, and a magnificent collection of working oxen, such as paid for a visit to the grounds, if there were nothing else to see.

There was also an excellent presentation of stock generally, Short-Horns, Ayrshires, Devons and Herefords, with a sprinkling of Jerseys and other good animals. There were also fine swine and sheep.

There was fair trotting, though the track pulled back a little on a mile race. Jones's Fearnaught Prince was on the ground and showed himself between heats.

We can say but little in commendation of the in-doors show. It was not complimentary to the people of Merrimack County, especially to the farmers, gardeners and merchants of Concord.

Then the attendance, though the day was fine, was meagre. It was the first day, and the people staid at home until they felt

sure something would be presented worth seeing. The second day witnessed a crowd.

The fair was creditable in the main aspect, but was not so good as the county usually makes.

CONCORD HORTICULTURAL SOCIETY.

The officers for the current year are —

President — Charles S. Eastman.

Vice Presidents — A. Leavens, David A. Warde, Anson S. Marshall, L. Downing, Jr.

Secretary and Treasurer — Frederick S. Crawford.

Executive Committee — A. T. Sanger, A. Leavens, Calvin Eaton, Daniel F. Secomb, George E. Jenks, J. F. Lovering, Edson C. Eastman.

The society gave a very acceptable show in Phenix hall, which was well attended.

The pomological department was especially fine. About one hundred and fifty exhibitors furnished nearly five hundred and fifty plates of apples and pears.

The display of grapes was very good, and shows that some of the early and most tender varieties ripen well in the upper part of the State.

The floral department was in good hands, and both the varieties and arrangement were very fine. The show of vegetables, though not large, had some excellent specimens, and contained garden products that were curiosities in their way.

D. F. Secomb of Amherst furnishes a large contribution of fruit, and specimens of two hundred and eight varieties of wood well prepared and classified. Austin T. Sanger furnished fifty-five varieties of beans, neatly arranged and classified, many of which were modern hybrids of great beauty. Samuel Eastman of Concord exhibited two apples, one the growth of last year and one of the present season, from the same tree.

There was also a curiosity in pomology, from Amherst, a plate of Baldwins from a tree grafted in 1810, the scions being only two generations from *the* original progenitor of this interesting and esteemed fruit family. This normal Baldwin was a fair, red-cheeked fruit, with a much longer stem than the degenerate apple of the modern nurseries. The modern dessert crab apple is not

yet appreciated in Concord, but it will be heard from in future exhibitions.

This society is only two years old, but it is making its mark in the present passion for gardening and fruit-growing.

CANTERBURY FARMERS' CLUB.

Canterbury is one of the oldest towns in the State, having been incorporated nearly one hundred and fifty years ago. Subsequently it suffered two divisions, one of which resulted in erecting the town of Loudon, and the other the town of Northfield. It has always been a farming town, and now depends on the products of the soil for its support. With a varied soil, pine plain, rocky upland, and a few stretches of intervale, it has been prosperous from industry and economy without venturing far into speculation.

Two years ago, a town agricultural association, that had existed previously, determined to make an exhibition of stock and farm products, and thereby stimulate its members into greater activity in the cultivation of the earth. The first fair was held, and met with such success as warranted a repetition of the show the last year. Wednesday and Thursday, the 16th and 17th of October, were assigned, and the morning of the first day, though threatening rain, found an excellent exhibition and many people present.

The exhibition took place in the Town Hall, and on the grounds around the old church, a sufficient area being enclosed for that purpose.

The first feature of the show that impressed us, was the sixty or more yoke of working oxen, most of which came in as school-district teams, and competed for the favorable opinion of the judges. The prevailing color of the cattle was dark red, the Canterbury stock being generally marked by the Devon blood, with a strain of the Short-horn. The Devon color prevails while the size is traced to the Durham, for we seldom see so many large, well-made, substantial oxen in a single town of but little above one thousand inhabitants. There was a pair of Dutch cattle, several pairs of young Herefords, and some of an Ayrshire cast.

There were four or five district teams. The best and most valuable were the seven pairs owned by Col. Clough, all of a clear Devon color, perfectly matched, and averaging in girth about seven and a half feet. These constituted a single farm

team, and a better one is not often found in any section of the State. The next team came from what was denominated the Baptist meeting-house district, and it was a very fine lot of eight yokes. The other teams were very fine and fell but little below those named, in size, symmetry of form or other meritorious points. Single yokes not in the teams were here and there found about the enclosure, which commanded attention.

There were among the neat stock eight or ten bulls, generally young, but presenting points of merit, indicating that the farmers are ready to favor improvements in stock, when they know just what is best. Most of these animals were Devons, to which they breed their grade and native cows, making a healthy and profitable stock. Arthur Clough had his Hereford bulls and his grade Herefords which he has exhibited at other fairs, and which have received much praise.

There were about twenty cows present, and more than that number of heifers from one to three years old, and nearly as many pairs of steers, with a good show of calves.

There were in the entire neat stock list more than two hundred animals, surpassing in number the exhibition of some county shows.

The horse show was not of much note, though a dozen or more colts were entered. There was no trotting, no trials of speed, and no tests of horse strength at a load.

An ox pulling match was the exciting feature of the afternoon, in which there was sharp competition.

The swine, chickens, turkeys and ducks were not out in great numbers, though the few present behaved with great propriety.

There was a full hundred sheep entered, South-downs, Merinos, and Leicester and South-down crosses. This was a good part of the show.

In doors, we found many important contributions. The vegetables and grains, though good, were not superabundant. There were a dozen fine traces of corn, lots of pumpkins and squashes, huge beets, compact cabbages, clean wheat, oats, and other grains; a handsome display of beautiful, shiny checked apples and a small floral exhibition.

The dairy was properly represented, and the samples of butter and cheese were of excellent character. There were cans of honey, and an abundance of jars of preserves, with a fair exhibi-

tion of household fabrics and curiosities which we do not find it convenient to name.

It was announced on the bills that Mr. Sturoc of Sunapee would give an address, but having been called away, he notified the managers that he could not serve them.

At the hour assigned, the doors of the church were thrown open, and the house filled with the farmers and their families, when Col. Clough explained the reason of the disappointment by Mr. Sturoc.

The presiding officer then introduced our veteran farmer, Levi Bartlett of Warner, who spoke briefly on the advantages of New England over the West in an agricultural view, and urged the sons of farmers to remain in New Hampshire. He was followed in an impromptu talk of fifteen or twenty minutes by J. O. Adams, Secretary of the Board of Agriculture, who made practical suggestions to lead farmers to practice those specialties in their occupation for which their soil, their locations and their markets were best adapted, and for which they had a particular taste.

An additional record of the society has been furnished by L. B. Foster, Esq., which we append:—

The Canterbury Farmers and Mechanics' Association was organized February 19, 1870, and has been in successful operation ever since. The meetings are generally held once in two weeks except during the summer months when none are held. Any person becomes a member of the Association by subscribing to the constitution and paying twenty-five cents annually. The meetings are usually employed in free discussions, both oral and written, of topics pertaining to farming. At each meeting a question is usually selected for discussion at the next, and persons are selected to lead in the debate. Occasionally some speaker from abroad is invited to deliver a lecture.

From the first of September last to the present time twenty-four meetings had been held. The following are among the subjects discussed: Agriculture; How to dispose of large rocks without oxen or horses; The occupation of farming promises a better success for young men than other pursuits; Is it more profitable to sell hay than to feed it out upon the farm? Which part of agriculture is most lucrative, bringing ready cash and leaving the land in the best state of fertility without buying fer-

tilizers? Is it to the interest of every young man to acquire some trade independent of farming? Germination of seeds and after-growth of the plants; Agricultural chemistry; Will our agricultural colleges and schools prove beneficial to the farming interest?

Wednesday and Thursday of the third week of October last, a town fair was held under the auspices of the association, with good success. Mr. Bartlett of Warner and the Secretary of the State Board of Agriculture delivered addresses on the occasion.

At the last meeting, April 14, it was voted to take a census of the town every year, also ascertain expenditures and receipts of farms. E. Osgood, S. C. Moore, and M. B. Neal were appointed a committee to prepare a schedule for taking the census. At the last annual meeting, November 4, D. M. Clough, S. C. Moore, and E. Gale were appointed a committee to visit other associations and report.

December 23, Charles Osgood of Missouri gave a history of farming in the west. January 6, J. B. Walker of Concord gave his lecture on plowing. March 3, James O. Adams, Secretary of State Board of Agriculture, made remarks on farming, also read an essay on the "Potato."

Joseph Kidder of Manchester was also present and spoke on the rotation of crops. March 17, John McNeil of Concord gave a lecture on the rearing and training of horses. March 31, H. D. Lord of Boston spoke on fruit raising, also the raising of horses.

The following are the present officers of the association:

President — S. C. Moore.

Vice Presidents — Myron C. Foster and John J. Railey.

Secretary — Philip C. Clough.

Executive Committee — S. C. Moore, Myron C. Foster and John J. Railey.

THE KEARSARGE AGRICULTURAL SOCIETY.

At a late day last autumn it was decided by the people of Warner to organize an agricultural society and institute a fair. The leading men in the town were interested in the proposition, Col. Ordway proffered a free lease of land for the purpose, which was accepted and the following officers chosen for the society:

President — Levi Bartlett.

Secretary — S. C. Pattee.

Treasurer — N. G. Ordway.

The fair was assigned and a large number of people met on the occasion, but a storm occurred, interrupted the exhibition and caused a postponement, and the fair was held accordingly. The show was unimportant, in itself, but it afforded the people a grateful holiday. Dinner was served up in good style in the new public hall, where justice was done by those who know how to appreciate "good things." At two o'clock P. M. a large company of citizens and visitors assembled in the town hall to listen to the speeches.

Carlos G. Hawthorne, Esq., of Hopkinton, was the first speaker. For about half an hour he intelligently demonstrated the real agricultural relations between the East and the West, and showed the valid grounds of choice between the two in either case. With a residence of over eighteen years in the western country, and being a gentleman of intelligently studious habits, Mr. Hawthorne is well prepared to give that information which is so important to all those who contemplate entering upon the scenes of the prairies. His address blended culture with knowledge, and showed how a man can speak good English, and make people wiser for hearing him.

H. W. Greene, Esq., of Hopkinton, followed with an interesting address upon the breed of horses our New Hampshire farmers should aim to cultivate. He deprecated raising trotting horses with a hope of profit, and advocated cultivating beasts for general use. The true signs of a good animal and facts relating to equine physiology were discussed in a manner showing the gentleman to be something more than an amateur in this theme. The remarks of both the speakers were applauded by the assembly, conspicuous among whom were the teachers and students of the high school, who came to the hall in procession at the opening of the meeting.

FARMERS' CLUBS.

The farmers' clubs of Merrimack county are diminishing in numbers and in interest. One exists at North Pembroke, N. B. Adams, President, T. W. Fowler, Secretary; and our former records included Andover, Loudon, New London, Franklin and other towns from which we have no present reports.

A farmers' club has been recently organized at Pittsfield, with the following officers:

President — P. C. True.

Secretary — George R. Drake.

Treasurer — Hiram Page.

Executive Committee—John M. Tucker, S. C. French, E. W. French and John Doe.

The Secretary gives the following records of the association and others that have existed in the town:

In 1864 a club was organized here mainly for the purpose of receiving the benefits of the Department of Agriculture at Washington. This gradually increased in size for three years, when it had assumed such proportions and amassed such an amount of intellect, that meetings were holden fortnightly for the discussion of questions and the reading of essays. These meetings continued during the winters, and since then none have been held.

During the fall of 1872, a club was organized in the southern part of the town, under the name of the Catamount Farmers' Club, and now boasts of nearly one hundred and fifty members.

To organize a club that will be for the farmer's interest to join and assist in carrying on, has been the aim of the projectors of this club, one that an ordinary farmer by paying one dollar can make five with no effort of his; to have free access to fifty dollars' worth of reading matter, besides being presented with seed and other valuables; these objects the officers have brought about, and now the farmers have only to join the club to reap the reward.

The club has leased a hall and it will be generously stocked with the best agricultural, floral and horticultural literature the country produces. This the members can peruse at any and all times.

The members who desire to subscribe for any literary, agricultural, horticultural or general periodical, can have any of the leading ones at the publisher's club prices, if ordered through the Secretary of the club. These are some of the inducements offered to persons, but the greatest pecuniary gain is to be made by the purchase of all farming implements and machinery at wholesale prices. Grass and garden seeds are also procured at corresponding prices if ordered through the club.

A registration book is to be kept in the reading-room, and any member desirous of disposing of, or purchasing any product of the farm, dairy, etc., can record the fact in it and make a sale or effect a purchase much easier than by the customary method.

The board of supervisors, consisting of the president, secretary, treasurer and executive committee, also make a rule that no member shall receive any seed from the Department of Agriculture

who will not verbally or in writing report the result of their culture. These statements will be forwarded to the Department at Washington, and will help along the objects of that institution.

HILLSBOROUGH COUNTY ORGANIZATIONS.

The county of Hillsborough is so situated as to be but partially accommodated by a single agricultural association. It has therefore for a series of years maintained a flourishing society in the southern section, and furnished the chief support for another in the northern section, and at the same time leave the eastern portion without a real and immediate connection with either of the organizations.

THE HILLSBORO' AGRICULTURAL AND MECHANICAL SOCIETY.

The officers for the current year are —

President — Benjamin F. Hutchinson, Milford.

Vice Presidents — William H. Hubbard, Amherst; Jonathan Snow, Milford; Samuel Hayden, Hollis; Jacob Putnam, Wilton.

Secretary — Dexter S. Burnham, Milford.

Treasurer — Frederick T. Sawyer, Milford.

Executive Committee — William B. Towne, Milford; George A. Wason, New Boston; Henry Gray, Wilton; Theodore A. Goffe, Bedford; Thomas M. Harvell, Amherst.

THE FAIR.

The twenty-third annual fair of the society was held on Tuesday and Wednesday, the 24th and 25th of September, on the society's grounds at Milford.

We reached the ground before midday of the 25th, after a ride of fifteen miles across the country, and found a large attendance from the towns in the vicinity. There were fully two thousand people present and some set the number much higher.

There were, first, many excellent horses, for family and farm use, and a few speedy animals, though no inducement is offered for fast practice by the society. They have a course of a half-mile, but not what may be called a track, and no premiums are

offered for special races. An award is given to the best trotter, but it is too small to invite much competition. The rule, though unsatisfactory to a portion of the society, gives entire satisfaction to exhibitors of neat stock, and other animals than fast horses.

The department of neat stock was well filled with choice animals, Devons, Jerseys, Ayrshires and grades. We saw but little of the full-blood Short-Horns. The Devons, of which Ward Parker's were chief, were superior, as they included some of the premium animals at the New England fair. Mr. C. C. Shaw of Milford had a beautiful stock of Jerseys, and there were many other good cows, heifers and bulls that we cannot individually name.

The working oxen, especially three or four teams, were excellent.

The sheep show at Milford is not to be named. There was none. This section of the country never finds a great profit in sheep-growing.

The swine were worth showing. The Chesters and Chester crosses prevailed. A cross of the Chester and the Mackay gave the prospect of the right kind of pork.

There was a genuine poultry show of forty or fifty coops, including most of the popular and fancy varieties.

The best show of fruit that has been made during the season in this State greeted the visitor at Milford. It was large, handsome and well arranged. Col. Wilder took occasion to say that it came up close to some of the very best pomological exhibitions in Massachusetts.

Then there were vegetables in great quantities, unequaled in size, and, if we were to be judges, we should say twice too large for profit. Without going into detail, we are ready to pronounce the show in the department of farm products fully up to the high standard of first-class exhibitions.

There was an abundant display of bread and kitchen preparations to please the taste, with excellent butter and a variety of domestic wines, flowers and fancy articles.

Implements, including sewing machines, mill and domestic manufactures, merchandise, pictures, etc., were abundant and of good quality.

The officers wisely arranged to have no set oration, and very little ceremony. At one o'clock, members of the society, invited guests, and any body who desired, sat down to a first-class dinner provided on the field. B. F. Hutchinson, President of the society,

presided; a blessing was invoked by Rev. Mr. Tilton, and the good things on the table supplied all present demands, and left a surplus for home use or charity.

After the dinner, the President, with brief words, expressed his gratification with the result of the society's efforts, and especially with the commendation that had been given by visitors on the ground. He was rejoiced to welcome to the occasion old friends, and he was assured all would be gratified to know that one of New Hampshire's distinguished sons was present at the table. He then introduced Hon. Marshall P. Wilder, of Boston.

Col. Wilder spoke in his usual bold, cheerful and impressive manner for fifteen or twenty minutes. He alluded to his boyhood days among our granite hills, and to his life-long interest in, rural pursuits. He referred to his last agricultural visit to our State, twenty-one years ago, when he addressed the State Society at Manchester. He made appropriate allusion to the late Humphrey Moore, and to his interest in rural pursuits; spoke of associations for the promotion of agriculture, and to their influence on the farming interests of the country; to the progress made in cultivating the soil, in implements, in crops cultivated, in agricultural intelligence, and eloquently contended that there is no decline in the work of the farmer. He referred again to the scenes of his early life, and closed with thrilling eloquence, reciting in an admirable manner passages of patriotic poetry. His remarks were received with frequent and rapturous applause.

Mr. James O. Adams, Secretary of the Board of Agriculture, then followed in a talk of a quarter of an hour; then came Gen. Head, President of the State Society; Major Ladd of Lowell, a New Hampshire man by birth, and who, by the way, made a most happy speech; after him came Joseph Kidder Esq., of Manchester; Mr. Boylston, of the *Cabinet*, who read a facetious report of his Busyfield farm; Mr. Wadleigh, Senator elect; Col. Riddle, Thomas Kaley, Esq., and William Ramsdell, Esq., of Milford.

Complimentary words of the principal guest of the occasion called up Col. Wilder a second time, who, in a tender and thrilling manner, expressed his pleasure at meeting his friends in the old Granite State homestead.

The Milford Fair was a success, both financially and as an agricultural exhibition.

OTHER WORK OF THE SOCIETY.

This society does not consider its labor done, when the fair has come to a successful termination. Its work is kept up during the winter months, more vigorously than in the summer or autumn. It is the only agricultural society in the State that has year by year maintained farmers' meetings. In these it has a reputation, not only for an intelligent discussion of topics presented, but for the cultivation of the social element. Members of the association have been accustomed to meet several times during the winter season, in the various towns favorably located, and to bring their families with them to engage in the pleasures of the occasions. We present brief notices of such meetings as have been attended by the members of the Board.

MEETING AT WILTON.

The first meeting for the season of the old Hillsborough Agricultural and Mechanical Association was held on the 19th, at East Wilton. The first business before the meeting was of a financial character, and related to providing for the payment of a debt of five hundred dollars, incurred in rebuilding the fence around the fair grounds.

After this business was disposed of, the question for discussion was taken up: "What specialty, grass or hoed crops, shall we adopt?"

Mr. Zebediah Abbott of Wilton was the first speaker. He found a change had taken place within a few years in farming business, and that it would not answer to follow old practices. Corn is now eighty cents a bushel, and was often about that figure twenty years ago, when labor was much cheaper than now. It costs more to raise it than to buy it, at least it is a question whether it does. When a pound of hay at the barn will buy a pound of meal it seemed much easier to buy than to grow corn. He was confident that on many of our farms we can grow grass by top dressing, turning over the sod, manuring and re-seeding, to better advantage than we can cultivate hoed crops.

Dea. Oliver Barrett of Wilton followed and said when he was more able to work than now, he could grow corn, but now, when he had to hire his farm labor, he had seen the advantage in growing grass. He dresses the land in autumn, and puts on decomposed manures; would plow in fresh and lively manure so as to

save the ammonia; turns over the sod after haying, puts on the dressing and re-seeds; has sowed grass seed in spring, with a small quantity of oats, and harvested good crops of fodder; thought nearly all lands would be improved by plowing, and therefore favored re-seeding rather than top-dressing, so far as possible.

Capt. Wm. Ramsdell of Milford thought no definite rule could be adopted; that the crop should be adapted to the soil; that some soils should be undisturbed; his land was adapted to grass and bore a crop for three or four years, and then needed plowing, when the roots started anew and flourished a few years more. It produced witch-grass. He liked now, at the age of seventy, to get along without much work, and therefore didn't enjoy the composting business; it had backache in it. He related the practice of a neighbor in raising milk, even buying hay and bringing up a farm from a condition supporting only three cows to a capacity to keep seven or eight.

Mr. Manser of Wilton said the milk producer could do that if he marketed his own milk, but not if he sold to middle men at three and one half cents a quart.

Mr. Matthias Wilson of New Ipswich has been in favor of corn growing, but begins to doubt if it is the most profitable crop; now leans towards grass and fall plowing.

Mr. Sheldon of Wilton had practiced inverting the sod and seeding in the fall; got a good crop next year.

Luther Cram of Lyndeborough thought when soil can be easily turned up it should be done occasionally to improve the land; therefore he believed in hoed crops to some extent, but could see the saving of labor in grass growing.

Moses Proctor of Milford sows down in the spring without grain, using merely grass seed, and the same season cuts a large crop of grass, even two crops in a year, often as much as two tons to the acre. He thought labor was turned into money readily in this way, but not by selling hay, but by feeding it out and selling milk. We could do well in making butter and cheese and beef.

Mr. Manser of Wilton thought it best to sell hay rather than milk.

Thus far the testimony had been mostly in favor of the grass crop. Mr. Richardson of Milford, a young farmer, turned the tide by showing that he had made more than a living by growing potatoes, and showed by his own experience that he could make

hoed crops a specialty. He would apply manure on the surface to a hoed crop as well as on grass.

T. A. Goffe of Bedford took the hoed-crop side, and maintained that the ground required the culture that hoed crops gave.

Mr. Dodge of Mont Vernon favored hoed crops, and showed that he could grow corn up on his hills successfully.

Mr. Haselton of Amherst was an advocate of grass culture. He knew of no way by which he could do so well as with grass. He could take a ton of hay to Manchester and with it buy a ton of meal, and have eight or ten dollars boot money. Holds to plowing occasionally for grass as well as for hoed crops. We need to stir the soil.

Mr. C. H. Holt of Lyndeborough made an interesting talk on several points named by former speakers.

Mr. Adams, Secretary of the Board of Agriculture, occupied a little time, showing how farmers in our State had kept up the fertility of their lands and successfully grown hoed crops. He named instances of corn-growing, potato culture and garden crops which were profitable. But he thought certain portions of the State could do better in grass growing.

The meeting was largely attended by the farmers and farmers' wives, but we regret that only a few young men were present. The people of Wilton furnished a collation in the hall at noon, which was greatly enjoyed.

MEETING AT AMHERST.

On Thursday, February 13, a meeting under the auspices of this society was held at Amherst, which in point of numbers and interest is not often surpassed.

The subject for discussion was "Agricultural Education." Mr. Francis Wright of Amherst was appointed to advocate the ground that the farmer's education is sufficient for his business, but he failed to be present, and Mr. J. G. Haseltine of Amherst was called on to take the opposite ground.

He maintained that the farmer, as well as the mechanic, merchant or professional man, should make a special preparation for his work. He needs not only practice, but book knowledge. It is necessary for the farmer to study soils and natural history, and be posted in matters of general knowledge.

Mr. Adams, Secretary of the Board of Agriculture, was called on, and said that every intelligent being was seeking knowledge,

in his own way. We are not satisfied with the old saying, "there is nothing new under the sun." The large presence here to-day proclaims that we are in the pursuit of knowledge. Education is not confined to books. The true system is broader and deeper. It comes from contact with real existences. Object teaching is now the most successful. The farmer is daily brought in contact with an endless variety of objects. If observing and intelligent, he truly communes with nature, and may become familiar with some of her many processes. Books on natural science will help him to investigate. Newspapers devoted to agriculture and farmers' clubs will assist him wonderfully. Within twenty years there have been great advances in agricultural knowledge. Fairs, clubs, periodicals and social intercourse have done much to help the farmer forward. You are living examples of what I say. No section of the State has a better reputation, and no farmers are more thrifty. Education, coupled with industry and effort, has accomplished it. The results are gratifying to yourselves and to the community. But our success should not deter us from seeking still higher cultivation. Chemistry and botany are proper studies for farmers' children. These studies will prepare the way for higher mental cultivation and wider fields of usefulness.

Mr. Adams occupied nearly three-fourths of an hour, and was followed by Rev. Mr. Davis of Amherst, who met the argument that graduates of agricultural colleges did not go into practical farming, by declaring that now here was a better field; they are the pioneers, and can be more useful in lecturing and teaching. By-and-by, when more are educated, some of them will work, while all will be the more useful for their college instruction. He advocated closer observation on the part of the farmer—greater exactness in his work. The farmer could study nature in all her aspects. We ought to be more familiar with the habits of animals, the nature of soils, trees and grasses. He advocated special farming. It made men more skilful. He spoke for twenty minutes with great effect.

Moses Proctor of Milford advocated constant acquisition of knowledge. He was not too old to learn. Farming is a great work, and all the knowledge we can get is needed to lessen its rigors. He advocated kindness to animals, and closed with some pleasant words regarding the family relation.

Miss Clark of Milford, a young woman of education, who manages the household for her invalid mother, read a fine paper

on "Home Duties," and was followed, in a facetious narrative, by Mr. C. C. Lord of Hopkinton.

A collation in abundance and of excellent quality was served in the hall by the ladies of Amherst.

In the afternoon, Hon. Moses Humphrey of Concord, by special invitation, gave his address on the "Management of Fairs."

He was followed, in an excellent talk, by W. D. Locke of New Ipswich, T. G. Holbrook of Bedford, J. E. Foster of Milford, and by J. B. Moulton of Milford. Further remarks were made by Joseph Kidder, Esq., of Manchester, and J. W. Pillsbury of Milford.

A MEETING AT BEDFORD.

The fifth meeting of the society took place at Bedford. A crowd was present, notwithstanding the blocked condition of the roads. The town hall was more than filled. Among the leading agriculturists present were Col. Clough of Canterbury, Gen. Head of Hooksett, and Messrs. Lawrence and Adams of the State Board.

The first question was that of legislation for farmers. There had been talk by several gentlemen on the subject, including Mr. Holbrook of Amherst, Mr. Tyson, and Mr. Kendall.

Mr. Adams of Manchester said that farmers could control legislation; all they needed was concert of action, education to know and present their wants. It is a mistake to send a new man every year to the legislature. He has but little influence the first year. He believed that the property of the country should be equally taxed, and that all should contribute to meet the expenses of the government. We may exempt specialties for a time that we may get greater advantage by and by, but those specialties should include farming interests as well as manufacturing.

Col. Clough of Canterbury made one of his best kind of farmers' speeches, which was received with rounds of applause, and commanded a vote of thanks.

Dinner was served, during a recess, in true farmer style, by the ladies of Bedford. After dinner, an address was delivered on the subject of manures by Mr. Lawrence of the State Board.

He was followed by Mr. Holbrook of Bedford, in a statement of the results of experiments he had tried with fertilizers. His conclusion was that there is generally more cheat in fertilizers than formerly, and that they are not worth buying.

Col. Clough thought stable manures best, and advocated specials only when others failed. He used them to start his crop and thought he gained a week or more by it. But he recommended them with caution.

Gen. Head was called up, and spoke for a little time, urging farmers to depend on themselves and not on middle men, — to associate and carry on their business.

Mr. Kidder of Manchester, was called at a late hour, but declined to speak further than to allude feelingly to the death of Governor Brown, to the wisdom of the late Humphrey Moore in his rural writings, and to show, to some extent, that Mr. Moore, fifty years ago, represented the condition of the farm interest of to-day.

There were meetings held at Hollis and Milford, which are not named in our report, inasmuch as the members of the Board had no part in their exercises.

CONTOOCOOK AGRICULTURAL AND MECHANICAL SOCIETY.

President — Erastus H. Bartlett, Deering.

Vice Presidents — Reuben F. Lovering, Hillsborough, C. G. McAlpine, Warner.

Secretary — John F. Chase, Deering.

Treasurer — Reuben F. Lovering, Hillsborough.

Executive Committee — Antrim, William Stacy; Bradford, John W. Morse; Bennington, John C. Dodge; Dunbarton, Charles Stinson; Deering, Almon Putney; Francetown, Hiram Clark; Goffstown, David M. Taggard; Greenfield, Henry Duncklee; Henniker, Josiah Morse; Hancock, David Patten; Hopkinton, I. D. Merrill; Manchester, J. B. Ellinwood; Newbury, Mark M. Cheney; New Boston, S. F. Burnham; Peterborough, Samuel I. Vose; Stoddard, G. L. Curtis; Windsor, Joseph Chapman; Warner, C. G. McAlpine; Weare, Otis Chase; Washington, Samuel Gove; Webster, Herman G. Sanborn; Hillsborough, Samuel M. Baker, Charles W. Conn, William E. Gay.

The fair of this society was held at Hillsborough Bridge on the 17th and 18th of September. The weather, as is generally the case with this fair, was unfavorable, so much so that on Tuesday the entries were limited. On Wednesday the sky cleared up, and for an hour or two there was an inviting look on the grounds. Thinking Thursday would be favorable, the managers continued

the exhibition the third day, but the rain fell continually and caused great inconvenience. The pluck of the officers and of the people was good, and the programme was carried out. It is estimated that about two thousand people were present.

The entries of neat stock of various breeds and grades were numerous and included many excellent animals. That region is a good cattle growing section, with abundant grass and fresh pastures, and we always expect to see a superior exhibition. There were some fifty cows presented, a large number of working oxen, and twenty or more bulls. The young stock were well represented.

Of sheep there were pens of Merinoes, South-Downs and Cots-wolds, all of more than the average quality.

Swine was not forgotten, and as usual made an important part of the show. Mr. Gillis and Dr. Goodell were the principal exhibitors with Chinas and other bloods.

The poultry show did not compare favorably with that of last year. But then it was extra. A few coops only were entered.

Vegetables were plenty and of such quality as to prove that the Contoocook Valley farmers know something about farming. The products of the soil, whether vegetables, grains, fruits or flowers, were favorably represented, in some respects making an unusually important show.

The dairy department had, as it generally does at Hillsborough, better specimens than we find at most country shows. There are dairies in that section that are especial favorites in our market, and some of these were represented at the fair.

On the second day there were some good trots, though the track was heavy and not in a condition to allow speed. No time is recorded as a true test of speed. Horses are always in order especially at Hillsborough, and so the crowd would stand by, rain or shine, to see the trots. There were many valuable animals on the ground.

On Wednesday there was speaking by several gentlemen. Mr. Sturoc of Sunapee made the opening speech, which was off-hand.

Col. Clough followed with his accustomed earnestness. Gen. Head and others followed, so that there was talking enough to give variety to the fair, and on the whole, considering the rain, it proved to be more successful than was at first anticipated.

POULTRY SOCIETIES IN HILLSBOROUGH COUNTY.

There are two Poultry Associations existing in Hillsborough County, though one has recently opened privileges to the whole State and is henceforth to be known as the

N. H. POULTRY SOCIETY.

President — Hon. V. C. Gilman, Nashua.

Vice-Presidents — Gen. Natt Head, Hooksett; Albert Beard, Esq., Nashua; James O. Adams, Esq., Manchester; Lowell Eastman, Esq., Concord; Hon. B. Wadleigh, Milford; Capt. Chester Pike, Cornish; Hon. Frank Jones, Portsmouth; Hon. Warren Brown, Hampton Falls; Hon. Samuel M. Wheeler, Dover; W. F. Daniell, Esq., Franklin.

Secretary — William C. Garmon, Manchester.

Treasurer — Col. George W. Riddle, Manchester.

Executive Committee — William T. Evans, Manchester; S. S. James, Manchester; A. W. Quint, Manchester; D. H. Goodell, Antrim; C. M. Boynton, Concord; O. A. Hamblett, Milford; W. H. Knowles, Nashua; D. W. King, Nashua; J. P. Cilley, Exeter; D. F. Meader, Dover.

The sixth annual exhibition was held in the city hall, Manchester, February 19, 20, 21, 1873. The weather was quite cold but the attendance considered good. Amount of funds received from all sources, \$204.20. The Society has exhibition utensils and cash to the amount of over \$300.00

THE NASHUA POULTRY SOCIETY.

This society was organized in March and held a very satisfactory show. The officers are President — A. Beard; Secretary — J. H. Thurber.

FARMERS' CLUBS.

There are just now no active farmers' clubs in Hillsborough County. Formerly Bedford had a flourishing club. It still keeps up its organization, but holds few meetings. Its officers last chosen are President — T. A. Goffe; Secretary — Silas A. Riddle. A club, of which Z. Breed is Secretary, exists at Weare, and steps were taken in the winter to form clubs at North Weare and New Boston.

CHESHIRE COUNTY ORGANIZATIONS.

This county has two organized societies holding fairs.

CHESHIRE COUNTY SOCIETY.

The officers of the society are —

President — T. A. Barker, Westmoreland.

Secretary — George C. Gilbert, Keene.

Treasurer — Luther P. Alden, Keene.

This fair was held on the 24th and 25th ult., at Keene. The officers report the number of entries fully equal to former years, and in some classes largely in excess.

Cheshire has long been noted for its fine oxen. Four town teams numbered 63 yoke, all of excellence. In cattle there were 45 entries of 142 animals; 26 of horses; 58 of sheep, and 63 of swine.

Mechanics' Hall was filled with the varied manufactures of the county, showy displays of our more enterprising traders, paintings, embroidery, fancy articles, etc. The display of vegetables was poor, and in fruit but little better. Of carriages, buggies, mowing machines, and farming implements there was a good display. Fully six thousand persons attended the second day, which was a success in every respect.

The directors decided this year to return to first principles, omitting the large purses to trotting horses, which formerly absorbed one-half the amount devoted to premiums, and endeavored to interest and please their patrons by such exhibitions of farm stock and products as in earlier days were the chief attractions of New-England fairs. Their efforts were successful, and all pronounce the fair fully equal to the average of the past ten years.

STOCK BREEDERS' AND MECHANICS' ASSOCIATION.

This society has its headquarters at Winchester, and is often known as the Ashuelot Society. Her officers are —

President — S. W. Buffum,

Vice-Presidents — H. B. Swan, E. C. Lyman.

Secretary — S. M. Morse.

Treasurer — Henry Abbott.

Directors — F. Weeks, M. B. Shaw, D. S. Swan, John Hutchins, Henry Lyman, N. E. Stevens, N. G. Guernsey, H. Courtland, and James Fosgate.

This fair was held at Winchester on September 18 and 19, and though greatly disturbed by the storm, gave evidence of a deep interest in the cause.

The show of cattle was not so large as in former years. That of working oxen was pronounced as good in quality as heretofore. Fat cattle were few in number, but very nice. Cows were fairly but not largely represented, the Alderney predominating, showing that our people are beginning to appreciate good butter. A small flock of sheep were all that were on the ground. The poultry show was somewhat meagre, but of approved breeds. Swine were not represented on the fair ground. The number of horses on exhibition was not large, but there were some very superior animals. Some fair specimens of vegetables and fruits were on the tables and shelves, but not so remarkable as to elicit encomiums. Contributions of butter were also small, but excellent in quality.

The address was given on Wednesday evening, by Joseph B. Walker, Esq., of Concord, which was accepted as a valuable production. He was followed by other speakers, making a profitable meeting.

KEENE FARMERS' CLUB.

The Secretary of the club sends us the following note in response to a call for information regarding the society :

The Keene Farmers' and Mechanics' Club has held no meetings during the past winter, as not sufficient encouragement was given towards it to defray the necessary incidental expenses, and it has rested as it were, but we do not consider it dead. The presiding officer is only a temporary officer chosen at each meeting. Secretary and Treasurer, George H. Gilbert. The farmers as a class have not taken as much interest in the meetings of the society as the mechanics have. We think the discussions of the subjects at these meetings of the club have done much towards promoting the new enterprises in the place, and are worth more than money to the town. I think another winter will see it again in successful operation.

FITZWILLIAM FARMERS' CLUB.

The Secretary gives the following account of the club in Fitzwilliam :

The Fitzwilliam Farmers' and Mechanics' Club was organized January 29, 1870. We hold a meeting on Friday evening of each

week during the winter months, and an original essay is read and a discussion had at each meeting upon various subjects connected with agriculture, mechanics, and the arts and sciences. Our meetings during the past winter have been very largely attended by both ladies and gentlemen, and have been very interesting and instructive, and we trust that much good has resulted from the same. The present officers are —

President — J. S. Adams.

Secretary — Amos J. Blake.

Treasurer — Milton Chaplin.

Executive Committee — J. S. Adams, John E. Fisher, D. R. Spaulding.

SULLIVAN COUNTY ORGANIZATIONS.

There is no county society at present in Sullivan, but the county has several efficient town organizations.

ACWORTH FARMERS' CLUB.

The President of this association is George Davis. The fair was held on the 2d of October, and is thus reported by one who enjoyed it:

By ten o'clock, A. M., the village was well filled by the frugal and industrious population of the town, and a generous sprinkle from other places. The show of stock in some departments we should call large. On the common, at one time, we counted eighty pairs of oxen, and I think, as to quality, they would compare favorably with similar stock found on an equal area in any part of the State. Also some very good fat cattle; but the show of cows, sheep and swine did not come up to our expectations. The display of poultry was also small. There was present a fair show of horses, especially those of the rising generation. We observed a fine turn-out, consisting of a span of large, beautiful grays, silver-mounted harnesses and coach; also a tasty pair of matched blacks. We noticed a few stock animals — horses, neat cattle and sheep — which we should call very fair.

In the town hall was displayed a variety of articles, embracing the useful, the convenient and the ornamental, together with a

collection of choice fruits and garden vegetables that would do honor to a common county fair.

The long table arranged across one side of this hall, with its load of choice viands, and the agreeable manner in which it was served, gave evidence to townsmen and visitors that one could easily be thrown amid less congenial surroundings. Brief off-hand remarks were made by President Bailey and E. W. Woodell, Esq., which were attentively listened to by a large audience in the open air, although the northwest wind brought a shiver to the luckless wight in summer attire. The Secretary reported the list of premiums, when three cheers were given to the Home Band, whose performances had given animation to the exercises of the day that might otherwise have seemed monotonous, when the weary crowd scattered for their homes, with the belief that the fair had been a grand success.

SOUTH ACWORTH CLUB.

A prosperous club exists at South Acworth, but we are not able to report its organization.

CLAREMONT AGRICULTURAL ASSOCIATION.

The following officers are reported, with no business transactions —

President — Charles H. Long.

Secretary — Arthur Chase.

Treasurer — George H. Stowell.

Vice-Presidents — John Blanchard, Enoch Johnson, H. P. Shedd, L. B. Judkins, Lucian Jones, Henry Colby, Bela Chapin, Abram Rogers, Augustus Barrett, C. L. Thomas, Sylvester Bartlett, Robert Bunnell, J. W. Chaffin, S. H. Andrews, Algernon Willis, John F. Jones, Sylvester Glidden, R. B. Ellis, George C. Grannis.

Board of Managers — Dudley T. Chase, George P. Rossiter, F. P. Smith, H. W. Parker, S. G. Jarvis.

CORNISH FARMERS' CLUB.

A club exists in the town, but no report has been made the present year.

LEMPSTER FARMERS' CLUB.

This is an efficient and useful society. The officers are —

President — Hiram Parker.

Vice Presidents — Kimball Pollard and A. J. Parker.

Secretary — Timothy W. Bruce.

Directors — W. B. Parker, E. S. Barrett, A. T. Perley, H. Fuller, C. D. Stafford.

The second annual fair came off on the 8th of October. Considering the lateness of the season and unfavorable weather, it was more successful than we could reasonably expect. The rain poured most of the previous day and night, with no prospect of a comfortable day until late in the morning. But the citizens, with their articles for exhibition, started, with many forebodings of a drenching.

A town team was formed at about 11 A. M., consisting of sixty-one pairs of cattle, of all ages from one to nine years. There was a good show of all kinds of stock, and in much better condition than last year. A creditable display of draft and trained oxen was made, showing what that noble animal will do if properly used. Lempster is hard to beat in matched cattle.

The hall was literally crammed with farm and garden productions, speaking well for Lempster soil, and a fine display of skill and taste by the ladies and mechanics, showing a growing interest in agriculture and the mechanical arts.

WASHINGTON FARMERS' CLUB.

The officers for the ensuing year are —

President — B. P. Blood.

Vice-Presidents — S. B. Strickland, A. Marsh.

Secretary — William W. Hall.

Treasurer — J. Wilkins.

An interesting fair was held last October, indicating a lively interest. The Bradford band was present, and addresses were made by Messrs. Joseph Lewis of Goshen, B. P. Blood, and A. G. Marshall.

GRAFTON COUNTY ORGANIZATIONS.

In this county there are two societies, one on each side of the county, to which we may name several efficient town auxiliaries.

THE GRAFTON COUNTY SOCIETY.

This is the oldest society, and has for officers —

President — J. F. Keyes, Ashland.

Secretary — S. D. Baker, Rumney.

Treasurer — C. M. Whittier, Plymouth.

The fair was held at Plymouth. They had two good days for the Grafton County Fair. But Thursday, the final day, was very unfavorable and prevented the full realization of the hopes entertained.

The horse show was the chief, and was one of great excellence. That section of the county has many valuable horses, and the owners were willing to present them at the show. There were also many fast travellers from abroad. More than one hundred in all were entered on the secretary's book.

The working cattle on the ground were of large dimensions, and by no means few in numbers.

The number of young cattle was fair; of cows, bulls, and other neat stock there was a small variety, including a few Devons, Short-horns, and Jerseys. The novel Swiss cattle from Massachusetts were present.

Swine, sheep and poultry were not fully represented, though nearly one hundred excellent sheep were shown.

Of farm products the contributions were limited, and not a great display of fruit.

The annual address was given on Wednesday, by Hon. John D. Lyman of Exeter. The chief features were the trots and a balloon ascension.

THE MASCOMA VALLEY SOCIETY.

The officers of the society for the year are —

President — Peter Kimball, Grafton.

Secretary — C. O. Barney, East Canaan.

Treasurer — Charles Kent, Lyme.

There are seven vice-presidents and a board of directors, consisting of one from each town.

Pecuniarily, the society has met with better success than many others. They expended some two thousand dollars the first year for premiums and expenses, which left us some seven hundred or eight hundred dollars in debt. We have paid premiums and expenses every year since, and the society are now four hundred dollars in debt, with the interest on the same. Thus far we have had unfavorable weather for every exhibition, or we should have long ago been out of debt.

The next annual fair is appointed for September 16, 17, 18, and exertions will be made to have the most successful exhibition yet held by the society.

LEBANON TOWN FAIR.

For the past four years Lebanon has held a town fair. The object has been to excite all possible interest in agriculture. Thus far the efforts of the citizens have been successful, and a fund has been established. The proceeds in many cases, have been used for the defraying of the expense of agricultural meetings. This year the total receipts were four hundred and forty-seven dollars, which will pay all expenses and leave a balance of two hundred dollars in the treasury.

The officers were —

President — John A. Miller.

Vice-Presidents — J. W. Jewett, A. W. Baker, Henry Hough.

Secretary — John T. Breck.

Treasurer — R. W. Cragin.

Directors — Nathaniel B. Marston, C. B. Plaistridge, Leonard Estabrook.

The area around the common was used for the display of stock, while the other articles were displayed inside the town house. One of the most noticeable things was the fine display of mechanical products, for Lebanon is pre-eminently a manufacturing town.

The exhibition of fancy goods was complimentary to the ladies; but the few specimens of mats and quilts showed that our girls do not equal our historic grandmothers in this branch of sewing.

In the line of apples the show was fully equal to many county fairs.

The cattle were hardly up to those of other years, although what there were were of good quality. Swine had not a single representative. A few years ago, Lebanon was regarded as one of the finest sheep-raising towns in the State; but that glory has departed and only a few specimens of Merinos, Cotswolds and South Downs were on the grounds. The "town team" which embraces three pairs of good cattle, made a good procession, said by some to be superior to that of any other year.

Trotting was not attempted, except in one or two instances. The attendance could not have been less than two thousand five hundred, and embraced representatives from all the neighboring towns. The address was delivered by Hon. Hosea W. Parker.

ABSTRACT OF THE ADDRESS.

Mr. Parker came not as a farmer, but as an admirer of their labors. At no time have the people become so interested in agriculture as at present. People are seeing that there is no more honorable or deserving occupation than the tilling of the soil. People see the need of a thorough scientific education as the condition of success in agriculture. Where can such wide opportunities for thought and experience be found as in the culture of the soil?

When man appeared upon the globe, he was placed over the animal and vegetable world to be its master. In the past, scientific knowledge has been disregarded by the majority of tillers of the earth. Our commerce and manufactures have made us noted throughout the world. Individual enterprise has done much, but it has been science and education to which we must give the greater credit.

It is sad to see how much the subject has been neglected hitherto, especially when it is remembered that more than one-half of the population are directly dependent on the cultivation of the soil. Our farmers must recognize the necessity of a thorough training as a necessity. And, indeed, they are recognizing the fact to-day. Agriculture, whether considered as an art or science, presents a history which can be considered with profit.

Rome had her agriculture, similar to ours. When this was protected, she ruled the world. Laws protected it; but at last, when laws pernicious to the real estate interest were enacted, Rome fell, as the land fell at last, into the hands of a few owners, and agriculture retrograded. One of the evils of the present day is the tendency of people to leave the country and concentrate in

the city. Industry, morals and ultimately national prosperity are injured.

The agricultural schools of Prussia, which date back three hundred years, have been examples to the world, and have served as models. To-day she has over fifty, and may well be proud of them. Other European governments have adopted Prussia's example and to-day there is hardly a nation on the continent without them.

Washington and some of the early fathers recommended the subject to the people, but through the general lack of interest on the part of the people, nothing was done. It was not until the establishment of the patent office that anything of a permanent nature was really effected. The agricultural department can be made the source of great good. The first agricultural college, established in Michigan, in 1857, set an example which was seen to be worthy of trial. Four other states followed the example of Michigan, but it was not until Congress took up the matter in 1862, that they came within the reach of the majority of the states. The New Hampshire College of Agriculture and the Mechanic Arts is capable of doing great good. But first let young men be taught that labor is honorable and due from them to nature. It is of little use to try to teach farming on a scientific basis until the necessity of labor is recognized by all. Man is the only thing in nature that is inclined to be idle. The animal and vegetable world around us are always in operation. We should never look down upon anything which is useful. The efforts of the citizens of Lebanon to encourage agriculture by her town exhibitions are commendable.

The first efforts of every farmer should be to make an attractive and thrifty home. Then labor, founded upon a scientific knowledge of agriculture, will bring in worthy results. The natural beauty of New England cannot be surpassed. Hills, valleys and mountains have ever produced a superior order of people. This State, although of moderate fertility, ever does well by him who tills his soil in an intelligent manner. Within the past two years, a new interest in this subject has been kindled. When the matter is taken still nearer home, and town fairs are established, we may look forward to the best results.

The speaker then spoke of the necessity of preserving forest trees as much as possible, they certainly contribute to the general health of the community.

Let libraries be founded in every community, and, although small, they will have an advantageous effect.

The speaker then closed with an admirable exhortation for the farmers to cherish agriculture and to enlarge their scientific knowledge. Then will our country be prosperous, and the great aim of America be realized.

TOWN CLUBS.

We hear of but two clubs in active operation. Lyme has one, G. F. Sawtelle, President, and H. H. Holt, Secretary. In former years several others have reported clubs, which have since evidently been suspended.

ORGANIZATIONS IN COOS.

Lancaster is the centre of most of the organized agricultural efforts in Coos County, though Colebrook as the shire of the Upper Coos has sometimes manifested considerable interest.

COOS AND ESSEX SOCIETY.

This society includes members of the two counties named. The President is John W. Hartshorn of Essex county, Vt., and the Secretary George H. Emerson of Lancaster.

The fair was held at Lancaster. There were on the grounds thirty-five yokes of working oxen and nine pairs of steers; fourteen bulls, old and young; twenty-six cows and fifteen or twenty heifers. A town team from Lancaster had fifteen yokes.

There was a small show of sheep, but such animals as were presented were unusually good. There were more than forty fine horses and a long list of colts of various ages.

The poultry and swine departments were not filled. Dairy products are marked as good; vegetables, not large; fruit, moderate. There was a gratifying display of domestic manufactures and household articles, with farm implements, curiosities and novelties. The fair was well patronized.

Dr. Mason and Mr. Lawrence of the Board of Agriculture were present and made speeches to the people.

LANCASTER FARMERS' CLUB.

OFFICERS.

President — Barton S. Towne.

Vice President — Wm. D. Weeks.

Secretary — Jonathan Smith.

Assistant Secretary — J. G. Crawford.

Treasurer — O. F. Bothell.

Executive Committee — J. W. Weeks, C. C. Brooks and Edward Spaulding.

This association has held many meetings, and has shown itself to be one of the best farmers' clubs in the State. The papers presented and the reported discussions do great credit to the farmers of Lancaster.

SPECIAL ORGANIZATIONS.

There are occasional organizations in various sections of the State that maintain some appropriate relation to the general interest of agriculture, but they are usually those confined entirely to the race course, and are not generally embraced in the limits of our reports. There is, however, an organization including a portion of our State, for the benefit of the milk producers, which is managed by the following Board of officers, which we must not omit to mention :

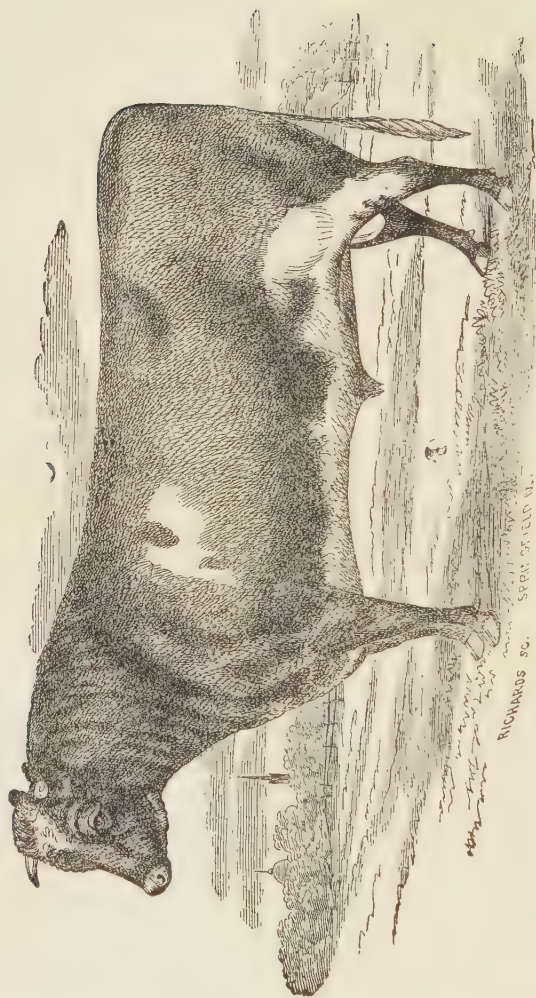
President — Dr. George B. Loring of Salem, Mass.

Vice-Presidents — J. W. Robertson of Quincy, Mass., Henry F. French of Concord, Mass., B. F. Hutchinson of Milford, N. H.

Secretary — Daniel Round of Norfolk.

Treasurer — Harmon Reed of Lexington.

Directors — G. M. Baker of Lincoln, George W. Sanderson of Littleton, Mass., Thomas F. Ward of Shrewsbury, Mass., Silas E. Stowe of Grafton, Mass., B. F. Hutchinson of Milford, N. H., Reuben Lewis of Groton, Mass., William S. Pillsbury of Londonderry, N. H., N. H. Clarke of Plaistow, N. H., Marshall Kimball of Mason, N. H., Jonas Fay of Southborough, Mass., C. H. Haskell of Little River, Mass., Benjamin Derby of Concord, Mass.



AYRSHIRE BULL "ARGYLE." Owned by WILLIAM BIENIE, Springfield, Mass.

ADDRESSES AND ESSAYS.

THE PRODUCING POWER OF THE SOIL AND HOW TO INCREASE IT.

[A Prize Essay by JAMES F. SMITH of Fitzwilliam, a member of the graduating class of the College of Agriculture, 1873.]

Soils, generally speaking, consist of a mechanical mixture of four ingredients, silica, clay, lime and organic matter composed of animal or vegetable remains called humus. A few soils have only one or two of these substances in them, but most contain all in some quantity. It is on account of the endless variety of proportions in which these elements are mixed in different kinds, that we have so many varieties.

Soils may be divided, according to their composition, into six classes :

1. *Sandy Soils.* Where sand forms above eighty per cent. of it.
2. *Clay Soils.* Which contain above fifty per cent. of clay.
3. *Calcareous Soils.* Containing from twenty to forty per cent. of lime.
4. *Marly Soils.* Which contain from five to twenty per cent. of lime.
5. *Loamy Soils.* Where clay and sand are in nearly equal proportions.
6. *Vegetable Moulds.* Which contain large amounts of organic matter.

Sandy soils are generally of a loose friable nature, easily tilled, and of a dry character. A great part of sandy soils are nearly worthless, barren tracts, as their power of retaining fertilizing substances is very small. They are so open that water readily penetrates them, and as readily drains off along the underlying strata. Some of these soils, however, contain a sufficient amount

of clay and lime to make them more compact, and this class forms the easiest tilled of all soils. They are light, warm, need little draining, and are generally profitable for early products. Turnips, peas, beans, and other crops of this nature thrive well on them. The white pine seems to find sandy soils a favorite. I have seen a thrifty growth of them on sand banks beside a railroad cut, where the sand was over thirty feet deep, and very poor for common vegetable growth.

The analysis of sandy soils shows a great diversity in composition, varying from 99 per cent. to 85 of pure silica. The elements necessary to fertility vary from no trace whatever up to two or three per cent., but always in small quantities.

Clay soils are in their nature as nearly the opposite of sandy soil as could well be imagined. They are tough, stiff soils with great power of absorbing and retaining moisture, cold and damp after rains and hard when dry. Their chemical composition is very good, and when the mechanical character of the soil is such as to permit the growth of plants, they are very fertile. This condition is best attained by drainage, and the use of bulky manures, with peat, lime, ashes, etc.

Clay soils form a large proportion of the farms in England and are quite extensive in this country, many of our river intervalles being of this formation.

Analysis of a clay soil gives the following result:

Organic matter and water of combination	3.38
Oxides of iron	8.82
Alumina	6.67
Lime	1.44
Magnesia	.92
Potash	1.48
Soda	1.08
Phosphoric acid	.51
Silicates	72.83
Sulphuric acid and chlorine	traces
Carbonic acid and loss	2.87
———— 100.00	

By comparing this table with that of fertile soils given farther on, it will be seen to contain the necessary elements of fertility.

Calcareous soils differ widely in their physical character, on account of the relative proportions of lime in the composition of different varieties. Some are dry, loose, yet deep and friable in

their nature, are productive and very lasting. Others are poor, thin soil, affording but a scant vegetation.

Leguminous plants as peas and beans thrive best on this class of soils, and it is well adapted to clover. All animal and vegetable manures greatly increase their fertility, which is not easily exhausted.

According to the proportions of clay and silica contained in calcareous soils, they are called calcareous clays, calcareous loams and calcareous sands. The analysis of these soils shows a diversity of from twenty to fifty per cent. of lime, ten to forty per cent. of carbonic acid, generally a small quantity of phosphoric and sulphuric acids, with silica and alumina depending on the variety, whether a calcareous sand or a calcareous clay.

Marly soils differ from the latter class, in the amount of lime they contain, which is from five to twenty per cent. They occupy a position between calcareous and clay soils, being less retentive and impervious than clay, and less open and porous than calcareous soils. They belong on the whole to the better class of soils.

Dr. Voelcker gives the following analysis of a marly soil:

Organic matter and water of combination	10.50
Oxide of iron and alumina	11.92
Carbonate of lime	19.92
Carbonate of magnesia	.25
Potash	.62
Soda	.09
Phosphoric acid	.38
Sulphuric acid	.04
Soluble silica	13.45
Insoluble silicate and sand	42.07
Loss	.76
	100.00

Vegetable moulds include all soils containing more than six per cent. of organic matter, hence they comprise soils with opposite character, some containing clay, others sand, and others, as peat, being about ninety per cent. of clear vegetable matter.

This class includes some very nice fertile soils, which are among the most desirable for cultivation. The analyses of different members of this class vary so widely that it is impossible to give any general table of constituents. Peat which comes under this class is discussed further on.

Loamy soils are those soils which contain the four elements of soils, silicious sand, clay, lime, vegetable and animal remains, in the most desirable proportions, and in an intermixed and finely divided state. They form the best soils on most accounts, being generally very fertile, and adapted to nearly all kinds of production.

They are easily worked and have not the stubborn character of clay, nor the loose, transient properties of sandy soils. It seems as if they combined the excellences of the other soils with few of their defects. Many alluvial deposits in the river valleys are of this class of soils.

The following is an analysis of a sandy loam :

Silica	63.20
Per oxide of iron	4.87
Alumina	14.04
Lime	.83
Magnesia	1.02
Potash	2.80
Soda	1.44
Phosphoric acid	.24
Sulphuric acid	.09
Carbonic acid	.05
Chlorine	.01
Organic matter	8.55
Water and loss	2.86
	100.00

These analyses do not furnish very reliable data for judging of the different classes of soils, but will convey some idea of their general composition.

When chemists began to analyse soils a few years ago, scientific and theoretical farmers based their fondest hopes upon the secrets of the soil which such analyses should reveal. They expected that by comparing the constituents of plants with those of the soil, they should see plainly where the latter were deficient, and by easy applications of special substances, bring their land to the highest state of fertility.

But every science is linked with others, and they placed too much importance upon this alone. Chemical analysis can surely point out a deficiency in composition, but there are so many other circumstances that modify the producing power of the soil, that often the greatest abundance of required elements may be present and yet the soil be barren.

Chemical and physical investigation should go hand in hand, and that farmer will secure the highest reward for his brain work who combines analysis of the soil with a thorough examination of the physical character of it.

The following table of the components of fertile and barren soils, from a paper by Prof. Morton, is also given by our later writers:

	Without Manure.	With Manure.	Barren.
Organic matter	9.7	5.0	4.0
Silica	64.8	83.3	75.8
Alumina	5.7	5.1	10.1
Lime	5.9	1.8	.4
Magnesia	.8	.8	.1
Oxide of iron	6.1	3.0	9.1
Oxide of manganese	.1	.3	trace
Potash	.2	trace	—
Soda	.4	—	—
Chlorine	.2	—	—
Sulphuric acid	.2	.1	—
Phosphoric acid	.4	.2	—
Carbonic acid	4.0	.4	—
Loss :	1.5	—	.5
	100.00	100.00	100.00

We see that the portion of soils on which fertility depends is but a small portion of the whole, yet this part will give a crop under suitable circumstances, regardless of the remainder whether it be sand or clay.

The conditions necessary for fertility are that the soil shall be free from standing water and mellow, that the roots of plants may penetrate the mass and secure the food needful for their growth.

It has been found that many so-called barren soils of New England contain the same chemical compounds, and in nearly the same proportion as those of the fertile valleys of the western rivers. But a large part of the phosphates and alkalies is found in coarse gravel, pebbles, and the fragments of rock, where it is impossible for the roots to reach them. We see by the last column that lime and plaster are two needed ingredients, but no one would think of applying coarse fragments of granite to make it fertile, although it contains six per cent. of lime and from seven to thirteen of potash. Yet soils are formed by the disintegration of rocks, and by deposits of animal and vegetable matter mixed

with the fragments. The discussion of these formations, and their state with regard to fitness for plant food, would be very interesting, and perhaps instructive, but more for the theoretical than the practical farmer. So I will pass on to the subject of manures.

This term is applied to all substances which increase the producing power of the soil. They act in two ways, mechanically and chemically; improving the physical character, and furnishing food for plants. They may be divided into two classes: Organic, consisting of substances which have been formed through vital agency; Mineral, including all earthy matters, alkalies, etc.

Animal excrement comes very properly the first under organic manures. This is too well known to need description, it has held the first rank among all fertilizers for ages. It contains all the elements necessary to plant life, and in the best condition to be reappropriated to vegetable growth. It is in the barnyard that men must look for the basis of successful farming, where manures are needed to produce crops. The liquid part of animal excrement is nearly as valuable as the solid portion, yet it is generally allowed to go to waste. Often, if money that is expended on artificial fertilizers was spent in drawing absorbents, as sawdust, loam, muck, etc., the result would be far more satisfactory.

Stable manure is very much improved by composting with peat, litter, weeds, leaves, and everything that will decompose. Liquid manure applied to the compost heap greatly increases the value, and amply repays all trouble.

The actual waste of manures in New England where every particle should be saved is perfectly enormous. Think of the amount of liquid fertilizers that runs through old stable floors and drains from manure sheds, or worse yet, runs off with the constant rains in spring from an exposed heap! If a farmer makes both ends meet as he is doing now what he would save by caring for this much neglected portion of his manure would be clear gain, and add many per cent. to his profits.

Night soil is a very important fertilizer and should be much more closely saved than is the common practice. It contains large quantities of the very richest food for plant life, and is suitable for nearly all crops. By filling the vaults with absorbents as peat and loam, at short intervals, especially during the summer, a large amount of fertilizing matter may be formed, and the health of the family be protected. In the neighborhood of cities or

large factories, this is one of the best and cheapest sources of manure, and if properly composted it becomes tolerable as well as improved.

Peat is a very useful substance, possessing very desirable qualities when dry as an absorbent, for which it is largely used, and as a direct manure applied with salt and ashes to the soil. Aside from its chemical properties, it has a marked mechanical effect, especially on light porous soil and heavy lands. It binds loose soil together and acts as a sponge to hold moisture, manures and gases for plant food. In heavy lands on the contrary it separates the particles and makes the soil more porous. These are evidently desirable qualities, but they are very much modified by the chemical composition.

The word "muck" or "peat" is used to name nearly all materials in wet places, from mostly pure black sand to clear vegetable matter. The following table from Prof. S. W. Johnson shows the variations in the ashes of different varieties :

	Least.	Greatest.
Potash	.05	3.64
Soda	—	5.73
Lime	4.72	58.38
Magnesia*	—	24.38
Alumina	.90	20.50
Oxide of iron	—	73.33
Phosphoric acid	—	6.29
Sulphuric acid	—	37.40
Chlorine	—	6.50
Sand	.99	56.97

These figures are sufficient, I think, to explain the different results that have been reached in the use of peat. There are, without doubt, many acres of worthless meadow mud scattered through the state, but it is none the less true that there are millions of cords of good fertilizing material, waiting to be returned to worn-out pastures and fields. Then shall old mowings be green again, to fill up the purse and delight the eye.

Guano is composed chiefly of the droppings of seabirds, and has been accumulating for ages on certain islands, principally on those of the Pacific off Peru and Chili. In a pure state it is one of the most powerful manures and must be applied with care. It gives the best satisfaction when mixed with peat, charcoal or other divisor, or plowed in with green crops. It is especially

valuable in the cultivation of corn, bringing the grain to earlier maturity, and giving an increased quantity.

A compost of guano and other material, in the following proportions, has been a very successful commercial fertilizer:

100 lbs.	Calcined Bone-dust,
56 "	Sulphuric Acid,
36 "	Peruvian Guano,
20 "	Sulphate of Ammonia.

These combine the best qualities of guano with durability and safety of application.

Bones make the very best of manures they contain large amounts of phosphate and nitrogeous substances. Much of their value is lost by burning or boiling. If they are dissolved by sulphuric acid forming superphosphates, or by the action of ashes in connection with lime and plaster, they retain their best qualities and have others added. By placing a hogshhead in a convenient place, putting in about six inches of ashes, then a layer of bones, next a sprinkling of lime, then more ashes, more bones, etc., and keeping continually moist, the bones will be dissolved and the whole mass furnish a rich manure.

Dead bodies should be saved as they give material especially adapted to plants. They should be covered with a coating of soil and allowed to decompose, then the whole mass should be forked over and the bones thrown out. After a day or two it is ready for the land.

Fish are valuable along the coast where they can be cheaply obtained, for manure. They are rich in phosphoric acid and nitrogen. Fish guano, which is the substance left after the oil has been pressed out by steam pressure, contains a large amount of phosphate of lime and ammonia, and in compost makes a good manure. The similarity in the composition of fish and wheat is very striking.

Seaweed produces a powerful effect when applied as a top-dressing to grass lands, but lasts only one season. Mixed with barn-yard manure it hastens its decomposition and renders it more available. Seaweed is rich in saline matter, and improves lands where salt and gypsum have a good effect.

Clover plowed in green makes a good manure, and lands are often raised from comparative barrenness to high fertility by continued plowing in clover. The long top roots of the red variety

reach materials that many crops cannot get, and the leaves absorb a large amount of ammonia and carbonic acid from the air. If plowed in when just in blossom it furnishes the largest amount of matter, and as this decomposes under the soil it forms an excellent fertilizer. A dressing of lime or plaster greatly increases this crop on most soils.

Leaves, chip-dirt, spent tan-bark, soap-suds, and other forms of matter which contain the elements of plants, should be thrown into the compost heap, and mixed with liquid manure, lime, ashes, and such decomposers, which a little care will save. There should be one of these heaps on every farm, for if rightly conducted, a large amount of manure may be secured at a small cost.

Lime is one of the foremost of mineral manures in importance, and is a necessity in agriculture. Although it forms but a small portion of the plant itself, yet it assists greatly in decomposing vegetable matter in the soil, renders stiff soils looser, and corrects the acidity of many lands. It is a powerful agent in retaining ammonia and thus enhances the value of manures. It should always be slaked before application. It is valuable as a top-dressing for grass lands and worn-out pastures. Ten or fifteen bushels per acre are often very beneficial. Lime is used quite extensively in composts; acting as a retainer of important gases, and a decomposer of organic substances.

Wood ashes form another valuable manure. They are good on loose soils, giving a firmer texture, retaining moisture, ammonia, and supplying needed alkalies to the plant itself. They are nearly as valuable after leaching as before, if used immediately, but lose their strength on exposure. They are perhaps the most useful for dissolving bones, and acting in composts as a decomposing agent. They contain all the earthy elements of plants, hence they are well suited to aid vegetable growth. Coal ashes are advantageously mixed with night soil.

Salt has long been known as a fertilizer, and its value consists in the important compounds which are formed in the soil by its component parts, chlorine and sodium. It is used to advantage on dry soils, and if applied at the rate of five to ten bushels per acre, generally gives satisfactory effects. If mixed with organic substances in large quantities, it prevents decay, but if used in small amounts it hastens decomposition. Three bushels of lime slaked with one bushel of salt dissolved in water, make a powerful

mixture, and especially valuable in composts. Used with peat alone it gives good results.

It has been stated on good authority that drainage will improve three-fourths of the land under cultivation, and that on half this land it will more than repay expenses. The beneficial effects of draining are almost too numerous to mention. Rich vegetable moulds, unfertile on account of the water in them, are most striking illustrations. I have seen ground that bore nothing but meadow moss and coarse scattering grass, made to produce over three tons of herds-grass to the acre and at small expense.

Drains make stiff soils looser, drier and easier to cultivate. It renders soils warmer, more accessible to atmospheric manures by the circulation of air, makes them earlier, deepens them, and aids a better distribution of fertilizers.

Tile drains are the handiest and perhaps the most enduring. In fields where stones are plenty, these may be profitably used instead of tile, and make durable drains. All drains should be at least three feet deep. A fall of three inches in one hundred feet will carry water off in tiles.

Surface drains are a nuisance, and generally of little benefit. In draining, full as much as in any farm work, it pays to do it thoroughly.

Irrigation is profitably employed as a means of increasing fertility in some sections of the country, but as a rule it is not a paying operation in New England.

Subsoil plowing is also advantageously practiced on some farms. It deepens the soil, and guards against drought. It is done best with those plows that simply stir the lower soil without bringing it up. The value of subsoiling is very much modified by the natural state of the land. In rocky sections it could not of course be practised, and in deep, damp soils, it is unnecessary.

There are many other ways for improving the soil, as deeper plowing, etc., of which limited space forbids the discussion, and many local fertilizers are highly profitable, but these have a limited usefulness.

The most powerful improver of soils, and the last I shall mention, is *common sense*. Without this, it is useless to think of success in farming. A man may have a large capital, and the storehouse of nature at his command, but unless he uses judgment in the rotation of his crops and in the application of his manures, he will fail as a successful farmer.

This element, instead of being dissipated on rainy days by loafing in the village store, or at the hotel bar, should be increased by careful reading and study. There are plenty of opportunities for being well read and posted on outside affairs, as railroads and newspapers have worked a radical change in this respect.

The farmer's position, socially and politically, is steadily rising, and the grand elements of continued progress are energy, enterprise, and education.

ANALYSES OF THE ASHES OF PLANTS.

NAMES OF PLANTS.	Potash.	Soda.	Magnesia.	Lime.	Phosphoric Acid.	Sulphuric Acid.	Silica.	Peroxide of Iron.	Chloride of Sodium.	Chloride of Potassium.	Carbonic Acid.
Wheat Grain	29.97	3.90	12.30	3.40	46.00	.33	3.35	.79	.09	....	....
" Straw	12.14	.60	2.74	6.23	5.43	3.88	67.88	.74	.22	....	....
Rye Grain	24.70	7.60	10.60	4.28	47.76	.65	1.72	1.91	....	....	*.69
" Straw	17.19	....	2.41	9.06	3.82	.83	64.50	1.36	.57	.26	....
Barley Grain	15.61	5.03	8.04	3.06	35.68	1.22	28.97	1.24	.45	....	....
" Straw	22.17	.84	3.55	7.59	3.22	2.61	46.30	4.35?	9.37	....	....
Oat Grain	15.13	1.83	6.32	3.59	25.14	1.75	45.03	.84	.44	....	.23
" Straw	19.46	1.93	3.79	7.01	5.07	3.35	49.56	1.49	2.71	4.27	1.27
Maize Grain	26.63	7.51	15.44	1.59	39.65	5.54	2.09	.50	....	....	....
" Straw	14.46	39.92	1.84	5.55	11.76	.59	18.89	.90	6.29	....	....
Potato	48.75	....	3.67	2.05	14.81	4.14	3.20	.44	....	10.91	10.58
Pea	36.67	7.32	8.62	5.39	33.88	5.43	.52	1.90	2.17	....	....
Bean	42.13	.90	6.55	8.65	31.87	5.50	.88	.36	1.90	.84	1.94
Turnip	36.98	6.76	3.61	11.14	9.74	12.43	3.43	1.09	7.85	.59	6.38

*Alumina.



DEVON BULL CALF.

AGRICULTURAL CHEMISTRY.

BY W. H. H. MASON, M. D., OF MOULTONBOROUGH.

The Board of Agriculture, being a novelty in this State, have had much to contend with, and none harder to overcome than the prejudices of our farmers against scientific farming operations. Many seem to think that what is not learned by a few years of experience is of but little account. For this reason it has been hard to arouse our farmers to the importance of attending and taking part in agricultural meetings. There is a foolish prejudice between labor and learning, notwithstanding they are co-workers. This prejudice, however, is yielding to the influence of the meetings that have been held over the State during the last two years.

That the farming interest of our State is not up to its proper standard there is no doubt. The decimation of our population during the last decade sufficiently proves this. Neither is the profit of farming what it might be, did our farmers give more care and study to that business. We need an educated yeomanry. I do not mean to say by this that our farmers are not educated men; in one sense they are the best educated because they, like the mechanic, combine mental and physical education. There is a wide distinction between lettered men and educated men. In one direction a man who cannot read or write his own language may be educated. Everything that a man knows is education. Then again a man may be able to read and write not only his own but several languages and yet pass among the people for a block-head. Business that requires a literary education we call professional. Those who study for professional life obtain diplomas as evidence of their proficiency. There ought to be established in every State a board of examiners, who shall be authorized to examine any one in the science of farming and give diplomas.

This would raise a spirit of emulation,—what one had done another would aspire to do. Students at our agricultural colleges will obtain them, but we want them in the reach of every one who will pass a successful examination. We want an agricultural profession. That is, we want agriculture reduced to a science. There is no business on earth so intimately connected with science as that of farming, and none where science is brought so little into requisition.

It is expected of the professional man that he have a correct theory, founded well upon the induction of facts. A theory may be entirely false, yet facts never lie. Science is the tracing of facts until they are established in harmonious relation. The most ennobling pursuit of science is the induction of facts through the operation of natural laws, consequently any profession or calling which brings into requisition the most chemistry has the highest stand in the sciences, for chemistry is the head of the sciences.

If farming then could be ranked among the learned professions it would stand in advance of all others. Every species of grass or grain, every nutritive product of the earth in their germination, growth and maturity, are the result of chemical action; then their digestion in the stomach, their assimilation in animal tissue, their excretions and final return to earth to become again food for other plants are under the same laws. Light, heat, vaporization and its descent upon the earth in globules of rain are governed by the same power, without all of which the soil has no power to produce.

I am not here to lecture upon chemistry, but it is so connected with farming operations that I feel it important to call your attention to it in this connection, so far at least as to convince every farmer of the necessity of a thorough chemical knowledge, so far as it is connected with his occupation. We cannot have perfect success without it. It is not a difficult, tiresome or uninteresting study. Rainy days and evenings spent in the study of some agricultural chemistry, instead of idleness at the village tavern or grogshops, will prove a rich investment of time, and will give a rich return.

All sums in figures, however great, are made from nine simple elements, called digits. The English language in all its extensive volumes is made up of only twenty-six elements called letters, and the whole language simply depends upon the position of

these simple elements. So what is on the earth and in the earth and the earth itself are made of a very few simple elements, and it is the position of these elements as they relate to each other that constitutes the diversity of the earth and its products.

The plant is composed of the same elements as the soil in which it grows, the difference consisting in the change in the proportion of the elements. These primary elements are oxygen, hydrogen, carbon and nitrogen, with the metals. The only difference between the vegetable and animal is the presence of nitrogen in the animal, which the vegetable does not possess to a great extent.

These simple elements are so combined as to form four simple bodies, which go to make the earth, viz: Clay, sand, lime and magnesia. These are not elements, but primitive earths; neither alone will sustain vegetation, but when properly combined form the most fertile earths. These are the *debris* of rock washed at some period, or disengaged by some process of disintegration. Earth and rock then are composed of the same constituents; in fact earth is disintegrated rock. Hence we may learn not to despise a rocky soil. Our farmers, many of them, turn away from rocks, sand hills and peat bogs, in disgust, whereas, in fact, they are the very sources of their wealth. They contain the exact fertilizers necessary to replenish an exhausted soil. I believe that most of farms contain all the necessary constituents to supply their wastes if properly utilized.

Carlton, in "Our new way around the World," page 1, in speaking of the dry and barren sandy soil of the Isthmus of Suez, showing the effect of irrigation, says, "water turned upon the sand if long continued will bring forth vegetation, and in time make a fertile soil." This result is brought about by the decomposition of the water and its chemical action, forming oxids, acids, and as a result, silicates. New Hampshire has, I believe, all the constituents and elements within her own borders necessary to recuperate her soil. Analyze every plant and you will not find any element not existing in our soil. It only remains to be utilized. This cannot be done without study and application. Do not forget these are the inorganic elements. You must with the same care and study preserve your organic constituents by preserving all decomposed matter around your barns and sink spouts, combine the two.

Lime is an indispensable constituent in all life whether vege-

table or animal. For the benefit of animal growth it exists largely in nature. The largest lime beds are found in Ireland. It exists in the earth in union with acids forming salts of lime; the principles of which are carbonic acid forming the carbonate of lime, and sulphuric acid forming sulphate of lime, or plaster. The first, or carbonate of lime, is the common form of lime beds, from which we obtain lime for mechanical purposes. The carbonic acid is driven off by heat (burnt lime.) The use of lime as a fertilizer consists in its decomposing power upon organic matter, such as vegetable growths, preparing them to be taken up by the plant, at the same time utilizing a certain portion of the lime for the benefit of animal growth, which feeds upon the plant.

That part of the animal body which depends upon the lime is the bony frame, without which there would be no strength or hardness. Its operations are very wonderful and interesting; we trace it from its crude existence in the earth to the vegetable, thence to the animal, thence back to earth again, changing its form during its transition, sometimes existing in the form of carbonate, sulphate, phosphate, lithate, etc., according to its different requirements and different degrees of solubility. It seems to be the connecting element of earth and vegetable and animal existence, consequently we need keep lime in some of its forms in view in treating upon agricultural chemistry. I have said it exists essentially in the bones of animals, in the shape, principally, of phosphate of lime. This being the requisite form for the constitution of bones, it follows that the decomposition of bones will form a concentrated fertilizer for another growth from the earth.

A very good way to reduce the bones of animals to a useful state is to dissolve them in diluted *sulphuric acid*. This acid is cheap and of itself a useful constituent of the soil. Care should be taken not to use it in its full strength, else it will act as a caustic and only char the outside, leaving the remainder unacted upon. One part of the acid to six of water will be sufficiently strong. It is best to take several weeks for this process. The harder bones may be crushed before applying the acid. By this process the sulphuric acid unites with a portion of the lime of the bones, forming a new principle, viz: the sulphate of lime or gypsum (plaster). A portion of the lime being taken away from the phosphoric acid of the bones, we have the super-phosphate and whatever of the acid remains after forming the super-phosphate becomes free, while a portion may be retained in an insoluble

state. After this process we have as a result, sulphate of lime (plaster), super-phosphate of lime, free phosphoric acid, which constitutes the valuable portion of the commercial fertilizers. Another very good way is to burn the bones and reduce them to powder. The new property formed by this process is the carbonate of lime; of course it is not so valuable.

We have also the shells of fish on our sea coast and in the beds of our rivers. The shell of the crustacea such as the lobster and crab contains six per cent. of phosphate and fifty or sixty of the carbonate of lime, the remainder being organic matter, which is readily destroyed by heat, leaving the lime in a state ready for immediate use. So also the shells of the molusca, such as the oyster and clam, are almost pure carbonate of lime containing but little animal matter. So also egg shells are made up of almost pure phosphate. Much wealth is contained in these neglected and discarded substances. These must be reduced to powder or solution before using. So also must rock be reduced to powder either by the slow process of nature or more quickly by art. Rock is not only essential as a fertilizer, but it has a favorable influence upon crops by retaining the heat of the sun by day and imparting it to the plants by night. It is a great mistake to seek for farms entirely destitute of rocks. The surplus can be used for fencing, others can be sunk into the low and wet grounds, where they will act as dumb drains and an everlasting recuperation to the soil. There is no difficulty in turning to good account the rocks upon the farm. Every crop taken from the soil disarranges the proportion of its fertile constituents. A return must be made either by art or nature. This is true of every soil either east or west. The yearly and semi-yearly extraction of the nutritive properties will soon tell upon the crops even of the deep and alluvial soil of the west, and they too must resort to fertilizers, but where are they to obtain them? They do not possess them in the rocks and sand as we do. They do not have their barn-yard manures as we do. There will be no alternative but to resort to importation. It is nowise unlikely that the time will come when the rocks from the rocky portions of our country will be crushed to powder, not only for fertilizers for home use, but for a western market.

Rocks are made up of quartz, felspar, hornblend, talc, serpentine and carbonate of lime, in different proportions. All plants when reduced to ashes consist of the same chemical constituents

as do these properties of rock. Thus we see that all matter, whether animal, plant, rock, earth, air or water is made up of the same elements. The different forms of matter depend upon the difference in quantity of the same element. Water is formed of one part of hydrogen to eight of oxygen by weight, and one of oxygen to two of hydrogen by bulk, both gases when existing alone; and in no other proportion will they form water. So also eighty parts of nitrogen to twenty of oxygen form air. In the growth of plants, in the composition of root, stalk and kernel, the same chemical exactness is observed; it is for the farmer to understand this. He ought to be able first to analyze the soil he cultivates, next the plants he wishes to grow; what is in the one that is not in the other. If he wishes to grow a plant containing an element not existing to a sufficient extent to allow the plant a full development, he needs to know how to supply that deficiency by artificial fertilizers. It is not a difficult task to learn. A little careful observation will teach him much. Does he wish to know whether his soil has a sufficient amount of lime, an essential property of all plants? Let him look at the rock. Is it whitish and brittle? Try his well. Is the water hard (as it is termed)? If so he has assurance that lime exists to some extent, at least where such water is found. If the rocks are hard and greyish there is more siliceous than lime and he will be likely to benefit his crops by the use of super-phosphate or some other preparation of lime. But it must not be forgotten that pure lime may exist in the soil without being imparted to the plant on account of the deficiency of the acid properties of the soil, though nature as a general rule is not negligent in providing means whereby this essential property of the soil is prepared for proper assimilation in the plant.

It is very easy for any farmer to make an actual test for lime, Get a little muriatic acid from the druggist (it is very cheap), take some of the soil to be tested, pour upon it a little water, stir it well, filter through paper, then add the muriatic acid. If there is any lime in the soil, it exists in the form of carbonate, that is a union of carbonic acid and lime proper. Now, the lime has a greater affinity for muriatic acid than for the carbonic, so that the carbonic is driven off in the form of gas, giving rise to effervescence. If no effect of this kind be produced there is no lime, or none of any account (for a minute quantity might be present without giving an appreciable result to this test). This

effervescence is not very active, it is known by little bubbles arising to the surface. This is a very simple, cheap and easy test, and within the reach and capability of every farmer. In this simple manner he may determine to a certainty as to the presence of lime.

We may, in this, see the cause of the conflicting opinions in relation to the value of the superphosphates. One man has tried it without success; another has obtained from it excellent results. They meet and discuss its value until vexed with each other, its worthlessness is so apparent to one and its value is so great to the other. If both had studied well the wants of their soils there would have been no occasion for dispute. The soil of one needed this kind of fertilizer, the other did not; one made a good investment, the other lost all.

So with the earths; he can do much without actual chemical tests. If the soil is sandy he wants lime, peat, mud or clay; when done he has reduced his sand bank to a productive soil, not for one year only but for all time, providing he gives it the same care that he does his other soils.

Much labor has been thrown away and conflicting opinions formed in the use of mud by not knowing where it should be applied. I have known land materially injured by application from the swamp.

Low, wetish land filled with organic matter is more benefited by application from the sand hill. The wet soil lacks in silex while the sand hill lacks in organic matter. We frequently see crops upon such land start with a luxuriant growth, with every apparent prospect for a full crop, but after becoming ten or twelve inches high fall to the ground or lodge. A good coating of sand will obviate this, because the stalk is indebted to silex for its strength; it is this property which gives the hardened, glazed appearance to the stalk. You will observe in the stalk of corn, near the ear, one joint of a few inches that has a smooth, glazed appearance. This is made up of silica in larger proportion than any other part, because it is at this point that the greatest strength is required; it is nature's provision.

Silex or sand, although worthless of itself, is the predominant part of all fertile soils, at least it must be sixty per cent. sand, more frequently eighty. We must not forget that it is worthless in its crude, unpulverized state. It must be changed into silicates, or to a powder. This is done by nature in a slow and uniform

manner; by art more quickly, by uniting it with lime or guine from the peat bogs. In the use of sand it would be much better to pulverize it before application. It becomes then more readily united with the other properties.

Every farmer has learned by experience the necessity of rotation in crops. But does he know why? It is simply because one kind of produce takes from the soil a certain element in larger proportion than another, and if you plant successive crops of the same kind, nature does not have time to recuperate in one year, so that it is necessary to put in a crop containing less of the constituents lost. For instance, the wheat straw contains thirty-four per cent. of silicates; oat straw seventy-six per cent. Now if the farmer takes a crop of oats from his ground he must succeed that by a crop containing less of the silicates, say rye, beans, or potatoes. We frequently hear farmers say that the oat crop impoverishes the ground more than wheat. It is because wheat straw takes from the ground only thirty-four per cent. of the silicates, and grass which usually succeeds both, containing a large proportion of the silicates, is less when preceded by oats. There would be no difficulty in raising successive crops if we will supply the lost properties in the same proportion as they are taken away.

I am now trying an experiment with the potato with a view to testing this position. I have already raised three successive crops with entire satisfaction. My plan is to return to the soil the elements which the potato extracts. One of these is potash, without which we cannot grow the potato. My plan has been to restore to the soil the potash and organic matter necessary to supply the waste. This I have accomplished by using *ashes and hen manure*. In mixing these two fertilizers, care should be had to unite them with loam; otherwise, the ammonia of the hen manure will be disengaged and lost in the air. For this reason, also, it should be used immediately after it is prepared. The nitrate of potash (saltpetre) will answer the same purpose.

If one wishes to go into the potato culture for the manufacture of starch, or for any other purpose, he should select his farm in granite regions, for the reason that the granite rock contains a certain percentage of potash, while the *trap stone* and gneiss do not. Now we have said the earth is disintegrated rock, consequently the soil of granite regions must contain about seven per cent. of potash. By this we reckon an acre of ground to the depth of four inches will afford, according to a German chemist, seventy

thousand pounds potash. This would supply the potato crop for an unlimited time. Then again there is a constant supply from the integrated rock. The granite is made up of feldspar, mica and quartz, which are constantly acted upon by the action of air and water. These are made up largely of silicates, or salts of sand, the quartz of almost pure siliceous. The carbonic acid of the air acts to separate the siliceous and potash, rendering the potash soluble and ready to be taken up by the young plant. With this estimate the rock must be purely granite. The calculation would vary in proportion as other rock is mixed with it; hence, in these regions, we need more of the organic manures and less of the inorganic.

I might take the analysis of other crops as compared with the soil, but I have not time, neither is it necessary, for I only wish to call your attention to it so that you may pursue it at your leisure. I will here briefly trace the chemical action in the germination and growth of plants. The seed is made up of two parts, the germ proper (which is simply the invisible future plant), and the seed lobes, both under one covering. The germ is divided into two parts, one to descend into the earth after nutriment to supply the other which rises from the earth. The lobes of the seed are to supply the germ with nutriment until the roots get of sufficient length to obtain it from the earth.

For the development of the germ three elements are necessary, viz: warmth, moisture and air. As yet the lobes are insoluble and consequently useless. There must be a process by which this provisional supply shall be soluble. This is produced through the agency of the three above-named elements, by producing a chemical action called fermentation. By this fermentation a sugar is produced which is all nutriment and gives ample support to the germ. The starch of the seed is the substance from which this fermentation proceeds. This holds good in every variety of seeds, so we see that what seems to be a special provision for the nourishment of man and beast, is a wise arrangement for the propagation of the plant.

He may learn from this a practical lesson in seeding. This shows us why we should select the plump, full kernel, that the young plant may have ample nourishment until it gets old enough to take care of itself.

Especially may we learn a lesson from this in the seeding of the potato. Some tell us a small piece answers just as well. You can readily see why this is not correct. We do not want too

many of the germs (called eyes) of the bulb, but the more we have of the lobe, or main substance, the better. We can see also from this, the error sometimes practiced of cutting the "seed end" of the potato for planting; by that erroneous practice, you get a large number of germs, and but little for their nourishment. This is only one instance in the operations of nature. The same principles may be observed in the perpetuity of all life, whether vegetable or animal. In the egg, the germ is minute, while the more bulky part, the nutritious albumen, is changed by warmth to a soluble support of the germ. When the small fish first appears from the spawn, you will observe a little sack on the side containing the same elements of nutrition, to give him support until he becomes of sufficient size and strength to hunt for himself.

Granite also contains lime as well as potash. Let us consider the crops of wheat and rye which require about an equal amount of lime. I have already said much capital is lost by not knowing where to put these lime fertilizers. You will see the reason of this; the crop requires just so much, and when there is enough no benefit arises from their use. You have heard farmers say that they had tried the phosphate of lime with the best results, and the next year have tried it upon the same ground, the crop growing no better where the lime was applied than where it was not. Why is this? The answer is obvious. The previous year he had applied more lime than was necessary, and it laid over for the next year. Then again, there may be meteorological reasons why it will prove more beneficial in some years than others. In warm, rainy seasons, there is a greater action of the elements upon the insoluble lime of the soil, consequently you might expect a greater development of that natural fertilizer in rainy than in dry and cold seasons. The granite contains about three-eighths of one per cent. lime. The pure virgin granite soil must contain the same. Now take the same acre as before with six inches of the soil, and you have three hundred pounds of lime; with a fair yield you will get one thousand pounds of grain out of the acre. The lime necessary to sustain this is only one pound. The straw for wheat or rye contains also lime in greater quantity—every ton of straw containing about five pounds. There should be more than a ton of straw to the acre; reckoning a fair yield, we may safely calculate ten pounds of lime sufficient for the growth on the acre. According to this reckoning you have a supply of lime for several generations. From this view we must conclude that lime

is not wanted as a fertilizer, in a pure, granite soil, providing the other elements are sufficient to bring it into a soluble state. In fact, you find lime in all rocky soils. Rocky land is hard to operate, but experience has proved that there is none so productive.

The practice among farmers has been to neglect as useless sandy lands (pine lands). I well remember the neglect my father gave to a piece of land on his farm of this description. This is a great and fatal mistake. Every one who has worked such soil knows that it improves every time it is moved and brought in contact with the air. It is easily worked, and rapidly comes into a permanently fertile soil. From the facts already stated we may see the necessity of deep ploughing. Many think the rich soil lies at the surface, and it loses its fertility in proportion as it recedes from the surface. How mistaken; it is the very soil you want to get at. Bring it up to the action of the air and light, and you have a virgin soil, it is like that of a new country. Dig down, farmers, there is where you find a good soil. That saves you the expense of buying fertilizers. Deep plowing gives the roots of the plant a chance to extend downward after the nutriment washes away from the surface.

Whether mistaken or not, I have come to the conviction that every farm contains the necessary elements for the supply of the waste of their inorganic substances. It only remains for the farmer to search them out and properly prepare and apply them. I have already mentioned the sand, the peat, and the rocks. The peat is organic, the combinations of which yield the necessary supply. We must not lose sight of the difference between organic and inorganic supplies, while we have enough of the earthy matter we must supply the other. This is done by the barn-yard manures, and all decomposed vegetable matter, whether by digestion or fermentation.

A knowledge of the chemical elements of the soil and the quantity required for the different plants will lead you to a correct information as to the quantity of artificial fertilizers needed. Much capital is lost for want of this knowledge. All over and above the quantity required is so much waste, so far at least as it is connected with the present crop. As a general practice, I have no doubt more is applied than is needed. I well remember when a boy, of hearing an old farmer say that one teaspoonful of plaster (sul. lime) was as good as more. I could not understand

this. It seemed to me reasonable that if one teaspoonful was beneficial, two would be twice as much so. But the old farmer was right. He had learned it by experiment though he did not understand the philosophy of it. The fact was one tea-spoonful contained all the lime the plant needed — probably more. A few years ago plaster was very much used, of late it has been superseded to a great extent by the artificial fertilizers. It holds a very prominent place among our fertilizers. You have found in your experience with this article that it seemed to do more good on newly-plowed land, while for the second crop it was useless. The reason of this is no doubt that lime was eliminated in some soluble form by the disturbance of the soil the previous year by bringing it in contact with air and light; we should not forget that light has an indispensable influence in the growth of plants. This form of lime is preferred to any other in all places where there is free ammonia, as in the stable and sheep-pen manures. I have said plaster is the sulphate of lime, that is sulphuric acid and lime. The sulphuric acid of the plaster has a greater affinity for ammonia than it has for the lime, so that the lime is disengaged and the acid unites with the ammonia, forming sulphate of ammonia, which is not volatile, leaving the lime free to unite with any other acid with which it may come in contact, probably with the carbonic acid, forming the carbonate of lime. The effect of this application is seen at once.

I have a field which has not been plowed within twenty years. I have top dressed it with barn-yard manure every three years, and taken yearly from it a crop of hay. For a few years everything went on well and to my entire satisfaction. I then observed a change which after a few more years became marked. The grass became very thick and promising during the early part of the season, but there was an evident lack of the stalk of the seed-head. This lack has continued to be more marked every year, until now there is not one stalk and head where at first there were probably thirty.

I still continue the same application. Now why is this? Some will say it is because the ground has not been stirred. Very well. But what is the chemical change? There is evidently a lack of silicate and phosphate to supply the stalk and seed. The sand is there, but not having been plowed it remains in its crude and insoluble state. Now what is the remedy? No doubt plowing is a remedy for the reason above named, or I can apply the

sand in some form so as to be acted upon in forming the silicate. This may be done by pulverizing the sand and strewing it broadcast over the field. This I have not done, but I have no doubt of the efficacy of the remedy. My soil is aluminous. I think in sandy land top dressing would not be followed by this result.

There is one other source of revenue to the farmer lying under the surface and almost entirely neglected, which I will mention in conclusion on the point of natural fertilizers. Though last it is not least. I mean the clay bed. I have told you that potash exists in the granite principally in that part of the granite called felspar. Now you moisten powdered felspar and you have a clayish substance. You are able at once to see that clay will fertilize soils lacking in potash, especially if you wish to grow a crop from that soil containing potash, as the potato. I will ask the farmers here to try an experiment next year. Draw out a few cart loads of clay; spread it out where it will dry; then pulverize it by pounding the lumps; when dried mix it well with some organic manures; it may be from the barn-yard, door-yard, or hog-pen; then plow deeply a piece of dry silicious land, pine land; hole it out; drop one quart of this mixture in each hole and plant potatoes, with no other manuring, and await the result. *Cæteris paribus* you must have a good crop. You need not try the experiment to be sure of a crop. There is a certainty in chemical action, as in figures, as to results. You do not need to set four under six and add them up to convince you that six and four make ten; so that if you know that the potato is made up largely of potash and organic matter, and that clay has a large per cent. of potash, you do not need an experiment to convince you that clay with a little barn-yard manure will grow the potato.

There is no part of farming operations but requires a certain amount of chemical knowledge. Take for instance the manufacturing of cheese. For this we need the cow-pasture and hay. We are told that some breeds are better adapted for this business than others. I think it depends more upon the feed than the breed. For instance that constituent part of milk necessary for the formation of the curd is caseine, and one of the constituents of caseine is phosphate of lime. We cannot have the curd without the caseine, nor the caseine without the phosphate of lime. Now at one glance you will see that a pasture robbed of its phosphates is not suitable for this business. The bones of the animal require now more than our exhausted pastures afford.

How can we expect then to manufacture this article profitably from pastures already exhausted of this constituent? Now you will ask what is the remedy? This is plain — strew on to your pastures the phosphate of lime, or give it in some form to your cows by placing it within their reach. It is better to strew it upon your pastures, for the natural elimination of any chemical element is best. Many other illustrations might be given had we time.

I will here call your attention to an observation I have made during the present winter. I had a bag of super-phosphate in my barn and its odor being unpleasant I had it removed to my barn-yard shed and placed on the top head of a barrel. After my cows came to the barn I noticed that they began to chew the bag of super-phosphate and continued it every time they were turned into the yard. This they did with a great deal of greediness notwithstanding the unpleasant taste of the compound. Instead of removing it out of their way I let them go on noting the result of such fastidious taste. The result is, my cows give more milk than ever before at this season, hold out in milk longer and thrive better with the same feed. Now what is the conclusion? I have told you that one prominent ingredient of milk is phosphate of lime. There was not enough in the feed to supply this ingredient, so nature gave the animals an instinctive knowledge of their wants through the capriciousness of taste. I believe all animals, man included, are warned of the wants of the system through the appetite. I intend to get some pulverized bone or phosphate of lime and place it in a trough in reach of my cows. Cows fed upon hay well headed and full of seed will get enough from the seed without resorting to this expedient.

This is only an outline of what the farmer may do; by study and perseverance he may advance step by step until he has mastered his soil and crops, and cultivate them with as much certainty as to results as a problem is worked in mathematics.

The best advice then that I can give to young men is, to stick to the old homestead. To older men, stick to your farms; stick to New Hampshire; we need all be proud of the old Granite State. She has a noble record. In the field, pulpit, at the bar, on the forum, in the legislature, in congress, and as representatives to every part of the world, her sons have a high position. It is only in agriculture we seem to be behind. This need not be. We have all the natural advantages to enable us to take a

high position in this branch of industry. This we shall do. This we are doing. The interest that has been taken during the last two years in the holding of meetings and formation of clubs, together with the aid of the press, is having already a marked benefit. People are becoming contented at home, we see more energy, more taste, more determination, more courage. Our agricultural fairs are taking a higher stand; horse trots, greased pigs and foot races do not now possess the ruling interest. We have more and better specimens of the earth's products; more and better cattle; while the handiwork, industry and taste of our females are better represented. It is mortifying, and a disgrace, that the day advertised for horse trots calls out the largest crowd. I do not expect to revolutionize our fairs in this respect, but I do hope to see the time when horse trots shall be second to the agricultural exhibitions. They should be disconnected. One has nothing to do with the other. Our best farmers have no taste for fast riding. It is at best traveling at an unsafe speed, entirely unnecessary, useless cruelty to the poor, dumb animals, and worst of all leads to a species of gambling.

Farmers of New Hampshire have every reason to be encouraged. Let them feel the elevation of their calling. Let the student, as he goes from school, return to the old farm, rejuvenate it, apply his education to its practical improvement, cultivate less land, do what is done with more care and study. Render homes pleasant by exhibition of taste and neatness. Keep away from the village tavern, grog-shop and gambling saloon, and I will warrant success, a success beyond that of any other calling. You must succeed if you study nature. Nature supports no man in idleness unless at the expense of his health and intellect. It is the laboring man who thinks, it is the laboring man who invents. He is equal to any emergency, quick in decision, prompt in action and untiring in devotion. Labor helps thought; thought aids labor, and both go to make a man of honor and an honest man. But there must be limit to labor, or the health becomes impaired by an excess of the means designed to secure it. Eight hours is a sufficient length of time for manual labor daily. Let the remaining time be given to reading, study, sleep and wholesome amusements. By this system the body never tires. Every morning finds it recuperated and ready for its daily task. By this system the irksomeness of labor is destroyed, it is rendered easy, profitable and pleasant. The farmer should avoid those sudden

and over-exertions so frequently seen in securing hay before a shower. The injury done to the body far outweighs the damage done to the hay.

Amid all the bright phases connected with our agricultural interests, there is one dark side that needs fill us with apprehension. I do not know how it is here, but as far as my observation has gone, the young people are not inclined to be farmers. We may well inquire who are to take the places of those who now cultivate our land? And another inquiry which interests them might also be made, what is to become of them when the arm upon which they have rested is powerless? People cannot all live in cities. They cannot all be merchants, clerks, or agents. There must be producers. The time will come when sinecure and easy positions will be out of reach. This tide of young people will, as sure as the laws of nature, turn and set back with the same swell and bear them back from whence they started. Within a very few years you will see these same people now become matured by disappointments and hardships, returning to try and retrieve their fortunes upon the neglected and forsaken farms. Young men and young ladies do not make haste to fly from the old homestead. Remember the fable of the squirrel. This is not all the fault of the young. Parents should provide recreation and wholesome amusements for their children.

There is one drawback to farming interests that perhaps is well to mention in passing. The capital stock of the farmer consists in his land and stock, all of which is exposed to the view of the assessor. Every acre of ground, every ox, every cow, every horse and all else of appraised value, which he possesses, is subject to inexorable taxation, while the usurer, the speculator, the gambler, are able to keep much if not all their ill-gotten gains out of sight. What the remedy is would perhaps require a wiser head than mine to say, but that there should be a remedy there is no doubt. When we consider that every structure of society rests upon his stalwart shoulder; when we consider that he is the framework, the main structure upon which all things else are built; and that everything connected with our existence depends upon his strong arm and mighty endurance to protect against adverse winds and tempests; we should be careful to relieve him of all unjust pressure. It is an evil difficult to relieve, but justice requires it, and I think as the attention of the people is called to it, it will not be long before this and all other obstacles will be removed out of his way.

It is a relief he has a right to demand, and which he is able if he will to enforce.

We should encourage everything in the interest of farming; form clubs, hold meetings, discuss. It is not only a mutual but a social benefit. Give encouragement to our agricultural college. Many say it is of no benefit because but few attend it. This is no reason. Those few will become teachers through the State, and assist in analyzing the soil. That is not all; the prestige of the institution has an inspiration in it. Everything that goes to elevate the calling has an advantage in it. But we must consider, it is now in its incipency. In a few years you will see a full class. It was thus when Dr. Nathan Smith started the Medical College. It has become now one of the first medical institutions in our country. Dr. Smith conducted it at first alone; now it requires six. It will not be a long time before Prof. Dimond will require aid. Other States have them, we cannot afford to be without it. We might, with as much reason say, but few go to the academical department, therefore the college is of no benefit. Gentlemen, where should we stand as a State without old Dartmouth? No matter how few or how many go there; it is a part of our State, we need these different departments. Every honorable calling should find a head there. There is but one fault, that is its location. Not that it should be separated from the college, but the whole institution ought to be near the centre of the State, but this is a question we are not to discuss here.

The farmer has no reason to be discouraged; his labor produces health, happiness, contentment; he is rising to his proper position; he is bound to take an advanced and elevated position. Let his talismanic watchword then be, onward. Perseverance, improvement, industry and economy constitute the true ægis of his success. When you shall have tried all these and failed, I will give you no further advice to stick to your farms. Try them, farmers, before you complain of your farms or your occupation.



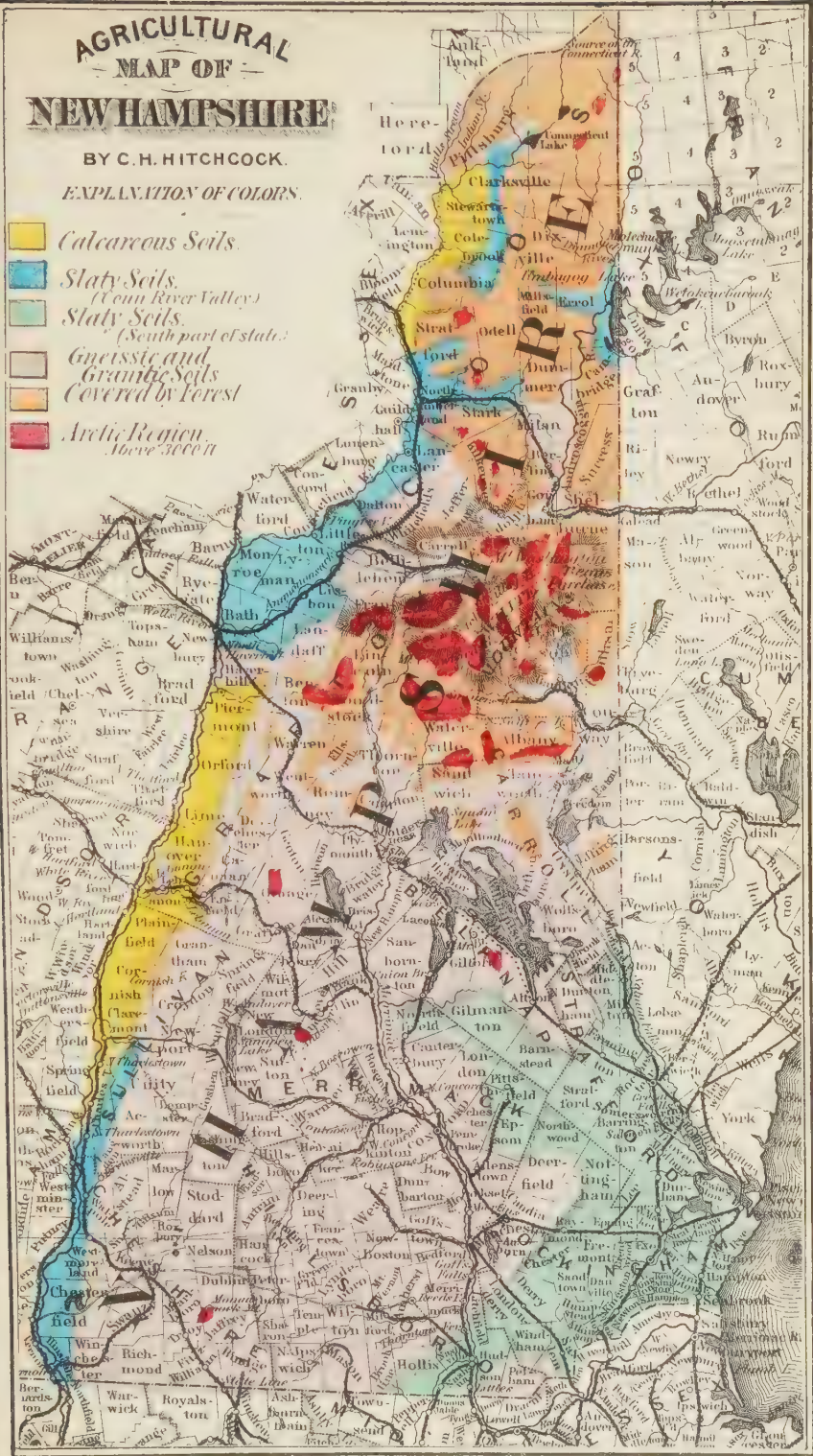
AYRSHIRE COW "BETSEY." Owned by WILLIAM BIRNIE, Esq., Springfield, Mass.

AGRICULTURAL MAP OF NEW HAMPSHIRE

BY C. H. HITCHCOCK.

EXPLANATION OF COLORS.

- Calcareous Soils.*
- Slaty Soils.*
(Coun River Valley.)
- Slaty Soils.*
(South part of state.)
- Gneissic and
Granitic Soils*
- Covered by Forest*
- Arctic Region*
Above 3000 ft



RELATIONS OF GEOLOGY TO AGRICULTURE.

BY C. H. HITCHCOCK.

In presenting briefly the relations of geology to agriculture, especially as applied to New Hampshire, it seems proper first to state a few fundamental facts, and then present the details that more immediately concern us.

The first inquiry in agricultural geology is, what is the composition of good soils?

The matter in all soils capable of sustaining vegetation exists in two forms, inorganic and organic. The first contains twelve chemical elements, viz., oxygen, sulphur, phosphorus, carbon, silicon, and the metals potassium, sodium, calcium, aluminum, magnesium, iron and manganese. In the organic part the elements are four, oxygen, hydrogen, carbon and nitrogen. The inorganic elements are derived from the rocks; the organic elements from decaying animal and vegetable matter. So that it is with the earthy constituent. They do not indeed occur in their simple state, but as water, sulphates, phosphates, carbonic acid, silicates of potassa, soda, lime, magnesia, alumina, iron, etc. The average amount of silicates or sand in soil is eighty-nine to one hundred parts.

The second inquiry is, whether these elements of the soil are found in the rocks. By consulting the details of their analyses as given in geological treatises, it will be seen that they are all present except phosphorus, which, however, is not unfrequently found in them in the condition of phosphates. Moreover, the proportion of the ingredients in the rocks does not differ much from that of the soils. Hence the conclusion is, that the latter are only the former comminuted, with the addition of from three to ten per cent. of organic matter.

Since the rocks differ considerably in composition, we should expect a corresponding difference in the soils derived from them.

And such is the fact to a considerable extent where the soil is simply the result of the disintegration of the rock beneath it. It is enough so in many districts to form characteristic soils. Thus over quartz rocks and some sandstones we find a very sandy and barren soil, though it is said that in nearly all soils enough silicates of lime and magnesia are present to answer all the purposes of vegetation. But the alkalies and phosphates may be absent. When the rock is limestone, the soil is sometimes quite barren for the want of other ingredients, and in consequence of the difficulty of decomposition. Clay, also, may form a soil too tenacious and cold. The sandstones that contain marly beds, and some of the tertiary rocks of analogous character, form excellent soils. So does clay slate, and especially calciferous mica schist. The amount of potash and soda in gneiss and granite often makes a rich soil from those rocks, and the trap rocks form a fertile though scanty soil.

But, in the third place, in most countries aqueous and glacial agencies have so mixed the soils together that their original peculiarities are lost, and new and compound characters are given them. This is particularly the case in northern countries, where the drift agency has swept over the surface and torn off and mixed together the disintegrated portions of the several formations. Subsequently rains and streams have carried the finer portions of the drift into the lowest places, and there formed alluvial meadows; and although these are usually the best of soils, they are often derived from many different rocks. The drift left upon the higher grounds is generally quite barren, chiefly because of its coarseness.

A fourth service which the geologist renders to agriculture is by the discovery of fertilizers. Sometimes he can point out deposits of the phosphates either in a crystalline state, or as coprolites or guano. He can also show what rocks contain carbonate of lime, or discover sulphate of lime, or marl beds, or green sand, or decomposing fossil shells, or deposits of carbonaceous matter. He can also find what rocks contain enough of potash or soda to be of service when pulverized.

THE SOILS OF NEW HAMPSHIRE.

The soils of New Hampshire are divided into four kinds upon the little map herewith presented. They are arranged in the order of their value. First, we have those derived from calcareous rocks, but exhibited in the Connecticut river valley, near

Colebrook and Claremont. Second, the balance of this hydrographic basin is occupied by more or less slaty and schistose rocks. These are somewhat calcareous, and decidedly magnesian. Third, the rocks bordering the coast in Rockingham county, and extending northerly up Piscataquis river, produce a very similar soil. Fourth, the rest of the State is underlaid by gneiss and granite producing several grades of soil, according to particular local character.

The fifth chapter the map shows what part of the State north of Winnipiseogee Lake is now covered by forest. The soil is mostly of the second kind underneath the trees. Last of all, I have shown the areas elevated more than three thousand feet above the level of the sea, which are as barren as a desert for most agricultural purposes. They might be utilized for the growth of arctic cranberries, were this berry ever in much demand. The extent of these barren grounds is not great.

The Calcareous Soils. It is well known that the soils in eastern Vermont are of a superior character. I refer to those in the eastern part of Orleans county, most of Caledonia and Orange, and the eastern border of Windsor and Windham counties. These lands produce more in proportion to their valuation and inhabitants, than the other districts east of the Green Mountains; and as the climate and general topographical features are the same, the reason of their greater fertility must lie in the chemical character of the soil. Limestone counties are everywhere fertile.

The Geological Survey has been the first to discover the existence in New Hampshire of considerable areas of this formation. The ledges are composed of alternations of bluish siliceous limestone, clay, slate, and mica schist, which, by the action of the air, rain and frost, readily decompose, and the lime and other fertile ingredients are leached out and diffused through the soil, when the roots of the growing crops can readily assimilate them. In consequence of this ready decomposition of the ledges, every small stream has excavated very much material, and this region is full of steep hills often conical. These steep hillsides are fertile, as may be instanced in the towns of Cornish and Lyme.

Furthermore, there are considerations tending to show that the adjacent granite soils are benefited by the proximity of the limestones. The study of theoretical geology seems of little practical importance to many people, but by examining scratches upon

ledges and other phenomena upon the surface, we can say positively that immense masses of ice once travelled over the State, in a general southerly direction (but varying greatly in different portions of the State). This ice, in its onward progress, broke off fragments of ledges and distributed them over the country. Hence, as the granite region lay in the path of this mighty stream, blocks of limestone came over its surface, and by their decomposition have tended to improve the soil. These may be found throughout the western border of the gneissic region from Dixville to Hinsdale.

Another benefit comes from the pressure of the calcareous rocks. By their decomposition, numerous small, molluscous animals are enabled to obtain the material for their shells. They consequently abound in calcareous countries, since they here find one of the essentials to their existence in great abundance. The aquatic tribes of mollusks exist in such great numbers that their remains accumulate at the bottom of ponds in deposits several feet thick. More than thirty of these beds are described in the Geology of Vermont in the region just spoken of. I have seen, as yet, only two in New Hampshire, one in Columbia, and the other in Brookline. The lime is nearly pure, and can be burned for quick-lime, or spread upon the land fresh from the swamp. The pondway has disappeared by filling up, and remains only as a swamp. The importance of these marl beds make it desirable for those living upon the calcareous regions to search further. It would give me great pleasure to visit any deposit of this kind that may be discovered by the farmers within our State limits.

The farmers will understand that lime and plaster are not so essential to the growth of crops in the calcareous areas as elsewhere. Nevertheless I have observed that where lime is the most abundant the farmers are apt to use a great deal of it, even burning it for their own use from the ledges on their acres. If chemical analyses are reliable, we ought to find large returns of potatoes, peas, beans, clover and rye from the calcareous area.

Slaty Soils. Of the two, the slaty soil of the Connecticut valley are superior to those along the coast. The rock is apt to be a schist containing much alumina, a little lime and magnesia, and ten or twelve per cent. of soda and potassa; other members are soft slates, which are rich in alumina and sometimes lime. When pulverized by the ice of the drift period they give rise to

beds of clay. The second class of slaty soils receives many boulders of granite, which may not be so beneficial as the lime brought into the Connecticut valley from Vermont and Canada.

Granitic Soil. The greater portion of the State is underlaid by gneiss — this is practically the same as granite — so that the words granitic and gneiss convey the same meaning so far as a mineral composition is concerned. I think that the gneiss is apt to produce better soils than granite. The soluble elements present are usually potash, from ten to twelve per cent. This is certainly a very valuable substance to be added to the soil, and nature is crumbling down the granites continually. It is done by the action of the atmosphere. The burning of wood and coal send out carbonic acid. Whatever of this is not utilized by growing plants is left in the air to be dissolved in rain water, the rain soaks into the rocks, and thus the acid acts upon the feldspars, setting free the potashes, perhaps combining with it to form the carbonate, (or saleratus). Should this mix with earth the result will be beneficial to the crops. I doubt not that the pulverization of granite will benefit soils. No one could expect to accomplish great things in this way, since the decomposition is gradual, but it would seem as if the constant destruction of granites by hammers and fires would in the course of years tend to remove unsightly rocks and to improve the soil.

Several varieties of soil occasion the granitic region. High up many of the mountains the granites are bare and allow little place for the accumulation of organic matter. When the valleys are wide, the better part of the rock and other substances accumulate, so that after a while many farmers find they can allow their hills to revert to timber and cultivate the original bogs and swamps with better success. Again the soil is mixed, in consequence of the abundance of diverse drift material. This is generally an improvement. Another variety is found in the sandy plains of Carroll county and the high terraces along the Merrimack. The current of ancient times was just strong enough to wash away the coarser particles into deposits by themselves, leaving the finer particles to form clays. An instance of this segregation is seen at Hooksett where this clay is used for bricks, while the sand is accumulated in piles by itself.

I regret not to be able to pursue this subject further. The study of the soils is one that the country is deeply interested in.

Organizations like the Board of Agriculture can be of the highest service to the community. They profit by the experiments of all the farmers. They undertake the study of the soil and crops in a strictly scientific way. Their report should be in the hands of every agriculturist in the State. And the farmers ought to study these reports for themselves. If not convinced of the soundness of theories proposed, or of facts stated they should make experiments on their own account. Those who study the report carefully cannot fail to reap benefit for themselves and their friends.



MARBLEHEAD SQUASH.

SPECIALTIES IN FARMING.

BY D. H. GOODELL, OF ANTRIM.

The prime object of all business is profit. Some make large gains and accumulate great wealth without the use of what is commonly called brains. It is an old story, and I suppose it is true, that Lord Timothy Dexter, a man noted for his treasures of money and poverty of intellect, was induced to send a heavy shipload of warming pans to Cuba. It so happened that while the climate of Cuba was sufficiently warm for the comfort of the people, the warming pans with the covers taken off were just what were wanted for ladles for dipping syrups and the shipload was sold with immense profit to the shipper.

It is often true that the most carefully considered human schemes come to naught while fortune frequently seems to smile upon foolish and reckless efforts. It is therefore impossible for us to devise any means which will insure success, or discover any broad highway which will certainly lead to fortune. And yet it is our highest duty to use our time and talents to the best possible advantage and leave the result to the great Controller of all things.

As farmers we should consider and discuss living issues. "Let the dead past bury their dead." The present is all we can call our own. The experiences of the past belong to the present and we should use them very freely, but if we attempt to follow the past in our farming operations we may be sure of failure. It is an old idea that every farmer should raise everything, which he needs to consume on the farm. This was a good idea one hundred years ago, but, though advocated by some prominent agriculturists, it is in my judgment a very foolish idea at the present day. The hand-cards and looms used by our grandparents were of immense value to them, and the raising of corn,

wheat, rye, oats, barley, hemp, etc., and of cattle, horses, sheep, swine, poultry, fruit of all kinds, as well as potatoes, carrots, beets, turnips, onions and parsnips on one farm was a necessity of that age, in order to enjoy all the comforts and luxuries of the farm.

But, friends, the world moves. Every department of legitimate business without any exception, so far as I know, is advancing and has been rapidly progressing for the past fifty years, and I assert, without fear of successful contradiction, that no kind of business has been making more rapid strides in the paths of progress and success than agriculture. Compare, if you will, the cattle exhibited at our state fairs for the past two years with those exhibited at Nashua six years ago. Examine the implements of husbandry shown at the last New England fair, and behold the immense improvement since the organization of the society. Go with me to the fair at St. Louis and there behold the acres of reapers and mowers, thrashers and seeders, plows and harrows, cultivators and numberless other implements for lessening the toil and increasing the profit of the husbandman, each machine stamped with the date of its patent, and look! almost every date is within the past ten years. So you may go on visiting every state of our country, and find sometime during the year an exhibition of progress which would scarcely have been dreamed of twenty years ago.

It is then the duty, and not only the duty but the necessity, of farmers of the present day to keep pace with the progress of their vocation. It is of the very highest importance that we carefully consider our individual circumstances and see what we can do to the greatest profit. Of one thing I am perfectly confident, that the idea of mixed farming is impracticable and should have been exploded long ago. Within my recollection a good Yankee farm laborer could be hired for from ten to thirteen dollars per month and board, while now the same class of labor would cost from twenty-five to thirty dollars per month. At that time corn was almost invariably worth one dollar per bushel and of course afforded New Hampshire farmers a large profit. Butter at that time was worth ten cents per pound, and if twelve-and-a-half cents was obtained it was considered a very large price. Now corn can be bought for less dollars than it costs to raise it on most farms in New Hampshire, while New England and New York can almost entirely control the butter market. While we

cannot compete with the rich prairies of the west and the genial climes of the south in the raising of corn, it is also impossible for them to compete with us in the production of good butter and milk. I have had occasion to travel through portions of the west and south several times and have almost never found good butter beyond Philadelphia. The quality of the grasses is such and the climate is such that the best dairy woman of New England would entirely fail of success there. I am therefore well satisfied that more attention than ever before should be paid to the dairy.

The same thing may be said of the potato crop. A decent potato was never grown in my belief in that portion of our country where good butter is not found; and besides the Colorado potato bug or some other bug is constantly preying upon western potato fields. But I hear one whisperer inquire, "How can the cows be supplied with their necessary feed, if our attention is wholly given to them, to the neglect of everything else?" And another asks, "Would you advise the planting of a whole farm to potatoes and raise nothing else?" Now let me here be distinctly understood as to my position as to special farming. I do not mean that a farmer who makes a specialty of the dairy should neglect the cultivation of the grasses and roots and every other such thing as can be cheaply raised on the farm, that will be of the utmost importance for the feeding of his cows, and think of purchasing his fodder of his neighbors, but that he should, in all his farming operations, have an eye to the great end of turning everything which he raises into the dairy channel; that he should not attempt to get large profits from the sale of butter, potatoes, fruit, garden vegetables, hay, etc., through the whole catalogue of farm productions.

Let every farmer first carefully decide what his farm will produce to the best advantage, what he can sell to best advantage and what branch of husbandry he himself is best qualified to manage, and then fix upon his leading idea and faithfully pursue it. It strikes me that it is a self-evident truth that a farmer having land near the city of Boston, or any other large market, on which he could raise vegetables or strawberries or fruit of any kind, which could be easily sold for from two hundred to six hundred dollars per acre, would be exceedingly foolish to devote that land to the pasturage of cows or the production of Indian corn. So it would be equally foolish for the farmer on the hill-

sides of the remote parts of our State to plant his farm all over with blackberries and other small fruits with no customers except the squirrels and blackbirds. No; but let him who has the taste and skill for the business seek his farm near some large market where manure and fertilizers of all kinds can be purchased cheaply and in great abundance, pursue his one idea of producing the best vegetables and the largest quantity, and study the best methods of preparing them for the market. Let him get well acquainted with his customers, learn their individual and peculiar tastes and fancies, and thus succeed beyond all comparison.

So let him, who, after careful consideration of the whole subject, decides that his circumstances and inclinations lead him to the raising of fine woolled sheep, persist in his study of this honorable calling until he succeeds, like a Hammond and Campbell, to both fortune and fame. Or, if he choose the dairy, let him study to know the best dairy stock; the best and most profitable methods of feeding and care; let him learn how and when to milk; how to take care of the milk; how to churn; what kind of a churn to use; how to put up his butter in the best possible shape; how and where to sell it, etc., and attain at last to the eminence of a Brooks, or a Bowditch, who never fail to get their seventy-five cents for every pound of butter they sell.

If he is a man of keen judgment and close observation, let him raise the best cattle for breeding purposes. Let him devote his whole time and thoughts to this one exceedingly important department of our agricultural interests, and finally succeed in this way, in spite of all the difficulties which he may encounter, like a McMillan, of Ohio, who, though yet a young man, has attained great wealth and rendered valuable service to the cause in our country; or like the Winslows of almost our own State, who have risen from nothing to a large competency.

There is not and never has been a man on the face of God's footstool, that can manage every department of what properly belongs to agriculture with success. It is the man of one idea that succeeds in every department of business. We love to revere and honor the name of Daniel Webster. A man who moved the governments of the world by the mighty power of his eloquent reasoning, and who stands in memory to-day as the peer of any statesman who ever lived, and yet he would never have been heard of so far away from Franklin as this, if he had not pursued faithfully and to the very end his one idea. Daniel Webster as a

farmer would have been a failure; as a merchant he would have disastrously failed; as anything but a lawyer and statesman he must have failed.

The eminent success of such philosophers as Franklin and Fulton and Morse and Howe and Stephenson, and multitudes of others, and the almost infinite advantage which they have been to the world, was the result of one idea. Had A. T. Stewart attempted to have managed every department of trade, selling dry goods, groceries, hardware, agricultural implements, flour and grain, books, etc., he never could have attained to his immense wealth and earned the title of Merchant Prince of America. Oliver Dalrymple of St. Paul, Minnesota, would never have made seventy-five thousand dollars in three successive years since the war in the raising of wheat if he had pursued a course of mixed farming, but his whole success is due to his managing one department of agriculture with great skill^a and energy. Instances of this same character could be quoted without number or limit, while instances of failure from efforts to spread out in all directions are even more numerous.

I know a man who for nineteen years pursued a straight and onward course in one line of merchandise and with immense success, so that he could count his thousands and hundreds of thousands of dollars. He then began to think that having been so exceedingly successful in the past he had capacities for any emergency, and stepping outside of his known beaten course he fell, and not only he was flat broke without a dollar he could call his own, but large numbers of others were financially ruined on account of his mistake. Experience teaches that the great majority of losses and failures are due to this same thing, the fact that people will overstep their abilities and attempt to do all things when they can do but few things. If a man can do one thing well he has thus succeeded. If he has attempted to do many things and only half done any he has signally failed. The example which God has given us is perfection. We can never attain to it. The nearer we approach it the greater our success.

This leads me to the very important subject of high farming. At the present cost of labor it is of the utmost importance that all our work should be done by machinery that can be done by it. To do this most New Hampshire farmers will be obliged to cultivate only their smoothest and best lands. I find that it costs but a very little more per acre to cut and store hay with the use of

the mower, tedder-rake and horse pitch-fork where two and one-half tons grow on one acre than it does where one ton grows to the acre, while the expense of filling the barn is vastly less in the one case than in the other.

To make farming pay we must then raise our hay on the best fields and turn the poor fields out to pasture. It costs but a trifle more labor to cultivate an acre of corn that will produce seventy-five bushels than to cultivate an acre that will produce but thirty bushels. I believe this principle holds good in the cultivation of all farm crops and should invariably be put in practice unless very peculiar circumstances can be shown as an argument against it. Cultivate such fields and such only as will produce the largest crops with the least manual labor. And high farming is not confined to the cultivation of the soil alone but pertains to all the operations of the farm. My neighbor says he can burn a cord of wood in boiling a kettle of water. He says further that he can take a nice shote weighing two hundred pounds and feed him ten bushels of meal, and the animal will not weigh a single pound more when he has eaten the meal than before. Now everybody knows that the cheapest way to boil water is to feed the furnace with fuel just as fast as it can be consumed. So if you would fatten a hog in the cheapest possible manner give him all you can possibly induce him to eat. A cow will have about so much feed to support herself, and if you expect her to give you any milk you must give her more than she needs for her own use, and then she will repay you for the whole expense with large profit. With very few exceptions it is the rule the world over, that he who raises the largest crops per acre, who has the largest and finest stock, who feeds his land, his cattle, his swine and everything which he keeps or raises in the best manner, is the man who makes the most money.

The old adage, "What is worth doing at all is worth doing well," holds as good with all farming operations as with anything else. Then, fellow farmers, let us cultivate less acres but be sure to be constantly increasing the quantity of our crops. No farmer can be called successful while he rests satisfied with cutting as much hay as he did the year before, or raising any leading crop, and finds he has only as much as he has had in the past. But by high cultivation, let him prove year by year, as he certainly can except in extreme cases, that our farms have never produced what they are capable of.

It is my conviction, based upon considerable observation during the past fifteen years, that if a common sense view of farming in New Hampshire is taken, our sons and daughters will not be compelled to go to other states to seek their fortune in trade and other ways, but may be led to see the comforts as well as profits of the New Hampshire farms. Let us break loose from old foggy notions and teach our children so. Let us cultivate our best fields only, and on them let us produce the largest crops. Let us raise the best of stock, and get our steers as large and as fit for the shambles at two and a half years old, by high feeding and great care, as our neighbors do at four and a half years of age, thus saving fully one-third of the expense. Let us study profit at every point; discard everything that does not pay; seize upon the few paying things and pursue them with great vigor, and then the millennial day for New Hampshire farmers will have come.



THE VICTOR HORSE HOE.



PIGEONS. (1) African Turbets. (2) Blondinets, Satin.

WHY LEAVE NEW HAMPSHIRE AND GO WEST?

BY A. J. FOGG.

Before this question is answered it should be carefully considered and weighed in all its bearings as to wealth, educational privileges, moral associations, health and contentment.

We know the question is answered by thousands without consideration. They will tell you in California of its fine wheat fields, its splendid vineyards, of a climate of six months without rain, of San Francisco with its fine harbor, of its fruit trees growing like Jonah's gourd; or, if east of the Rocky mountains, of the broad and fertile prairies, which extend as far as the eye can see, the vast corn and wheat fields where the husbandman can till five acres with the same ease as one in New Hampshire.

These fairy tales sound well to the ear, and read well on paper, and our people are too apt to forget they may be seeing the bright side of this fancied picture, the antipodes of which is as dark and black as the night; they forget that the writers of these glowing articles are the hired agents of some great railroad corporation, or heavy land speculator, and their statements are as much colored as a life insurance advertisement, and more fictitious and romantic than the tales in the dime novels which flood our country.

In sailing from Calcutta through the Straits of Malacca you pass numerous islands called the Spice Islands. Apparently nature never more lavishly bestowed her charm and her resources to make it a garden of Eden, where man can live and eat his bread without a drop of sweat ever falling from his brow to earn it. The name lends enchantment to the ear. Here spontane-

ously grow the nutmeg, clove, pimento; the forests are ever loaded with delicious fruit, and are resounding with the music of birds adorned with beautiful plumage, while the waters swarm with myriads of fish. The air is made fragrant with the perfumes of spices and delicious fruits and the whole made beautiful by shades of deep green fanned by the gentle sea breeze, and everything appears to tend to make it the paradise once lost. But like the stories of these western correspondents, there is another side to this glowing picture. In these beautiful groves lie coiled the most venomous serpents ready to fasten their poisonous fangs on man or beast; or lurks the tiger watching for his prey; here are scorpions, lizards, centipedes, wood-leeches, lici, flying ants, bugs of every kind, flies, fleas, beetles, cockroaches, spiders, all at once in motion, creeping, hopping, jumping, skipping, running and flying, making it almost impossible for civilized man to live with any degree of happiness. This parallel may be drawn rather strong, but it has its moral.

California extends north and south for nearly ten degrees or about seven hundred miles, and has an area of one hundred and eighty-eight thousand square miles, or territory enough to make twenty States as large as New Hampshire. It has a population of nearly six hundred thousand, and if as thickly settled as this State it would have over six million of inhabitants. As writers say, it has its fine wheat fields, its beautiful vineyards, and large flocks and herds among its mountain passes. In the valleys no rain falls for six months at a time, and as often as one year in four, a general drought prevails which dries everything to a crisp and destroys a large proportion of the crops. We can have a faint imagination of the desolating appearance it would give, when in New Hampshire we have no rain for four weeks. These dry years the cattle are to be driven to the mountains in order to live. Then comes the rainy season for six months, rain falling nearly every day, sometimes producing devastating floods. We can imagine the dreariness of this kind of weather by a rain storm in New Hampshire for five or six days. California rests on a bed of boiling lava now and then breaking through the crusts of the earth in the shape of hot boiling sulphur springs. It is liable to violent earthquakes and volcanic eruptions, and shows more marks of breaking up by violent convulsing and rending in fragments creation's work than any other spot on the globe. For

happiness and a general distribution of wealth among the whole people it is not to be compared with New Hampshire. Few men may secure more wealth, but a larger number will see more poverty and wretchedness.

This side of the mountains we will attempt to make no comparisons, but before we get through will give a few statistical facts to show that more money can be earned in New Hampshire, in the various vocations, and that our State can give more steady employment to a larger number of people than in the western states, where the rise in corner lots in paper cities is considered more of a resource than the corn or wheat which grows on the prairies.

Thanks to the wise Creator, he has given us New England with all the required attributes for the promotion of happiness, industry and civilization. We have the mountains, the hills, the valleys, the rivers and the cascades; the fertile intervals, the frequent showers, the sunshine, the heat and cold, the ice and snow, the seedtime and the harvest. A country where all the natural faculties of man can be developed, and where more people are employed than in any part of this country, in proportion to its population. In the West, a man must be a farmer or a merchant, but here we have all kinds of trades to suit the wants of all classes of people.

For twenty years the capital of New Hampshire and New England has been flowing into the West like the waters of the Merrimack into the Atlantic, and many have thought that long before this time, our country would be depleted of its surplus capital. But we have built their railroads, their fine towns, and have sent our young farmers and mechanics by the thousands to swell their population and increase their wealth, and still we have nearly doubled our valuation, though we have decreased in population. The great secret of the success of our people is in the various occupations, so that all classes can be suited to the trade which they are adapted for, consequently more people are employed in the various vocations than in the West.

A few statistics from the census of 1870 will give some light on this important subject of the employment or industry of the people.

In 1870 Illinois had in its population of males sixteen years of

age and upwards, 756,000 — of this number, 656,000 or 86 1-2 per cent. are employed in some occupation, from the clergymen and lawyer to the common choreboy. The number of females of the same ages were 779,000; number employed in all pursuits, from teachers to house servants, were 59,000, or 9 per cent. The number of males in New Hampshire was 106,000; number employed in same occupations 94,000, or 90 per cent.; number of females, 115,000; number employed, 23,000 or 20 per cent. If Illinois had the same proportion to its number employed as New Hampshire there would be 26,360 males set at work who are now idle, and at two dollars per day and three hundred days for a year would earn \$15,729,000 annually, and 74,690 females at eighty cents per day, would earn the large sum of \$17,925,000. If Illinois were like New Hampshire, this large population of over 100,000 of men and women, instead of being consumers only would be producers and earn the large sum of \$33,600,000, annually, or enough to build and equip over eleven hundred miles of railroad in that (now called) enterprising State every year. Some will attribute the female employment to the menial labor in the factories; that has its share it is true, to a certain extent, as far as employment, but a more happy, light-hearted and well-dressed class of laborers do not exist in the world than the factory operatives of New Hampshire. The same proportion of labor as in this State would educate them over 2000 more school teachers and introduce 3000 more sewing machines than they now have, and so on in all branches of industry.

If the facilities for labor were no better in New Hampshire than in Illinois 3390 men and 12,600 women who are now employed would be in idleness, or enough to run all the manufactories in the city of Manchester. Statistics prove that \$130 is annually earned for every man, woman and child in all the branches of industries in New Hampshire, while in Illinois only \$154 is earned. The expense of living is not materially any different, if the people of New Hampshire would subject themselves to the same deprivations as a large class do in Illinois.

The census of 1870 shows that there were in California who were natives of New Hampshire 2,537, in Illinois 8213, Indiana 1,044, Iowa 5,057, Kansas 758, Michigan 3,633, Minnesota 3,272, Missouri 1,384, Nebraska 419, Nevada 289, Ohio 3,329 and Wis-

consin 4,908, making the total number who have moved West and are now living, 34,843 souls, or over 10 per cent of its population. There have been born in this State and are now living in other states in this country 124,579 persons, and there are now living in New Hampshire those who came from other States and foreign countries, 75,830, making the balance against us 48,749 or 15.1-2 per cent. of the present population. This shows conclusively that the natural resources of the State must be good, and its people energetic to sustain such a drain of its population with the large amount of money they have taken with them, or to even sustain a State organization, but its vast resources have enabled us to increase the wealth of this State nearly 100 per cent. within thirty years and increase our population 33,726.

It is a mistaken idea of the people that there are other fields where more money can be earned and less labor performed than in this State. There are some localities no doubt in this country where a few men get rich faster than in this State, but it should be remembered that as a rule where a few men are accumulating wealth rapidly a larger number are kept poor. We do not mean to be understood that where capital is earning a fair dividend, and men who own it are accumulating, but where men are not legitimately earning any more than a fair compensation, but still are securing wealth rapidly. In these cases some one must suffer for their prosperity. If defaulting bank officers and civil officers would but remember when they read and listen to the fairy tales of men, who, speculating in stock frequently made a fortune in a day, that there was another class of men who would lose the same amount, they doubtless would have never ventured in the field of speculation, and to-day would stand before the public honorable men, instead of fugitives from justice.

We do not intend to admit to the West that their farming facilities are far ahead of New Hampshire, when everything is considered as to price and market. We are willing to acknowledge that three bushels of corn (and some other grains), can be raised quite as early in the West as one here. But corn and wheat are staple products, and we have never found any man inventive enough to form any style or fashion that would induce men to eat more meal or flour than their appetites craved, and doubtless it never will be done. As it is said, the West is the grainery of the world, and the world will have a supply of bread

if it can be obtained, but unlike other merchandise it is never wasted to the calls of fashion. When we hear people boast that in the West you can raise three times as much corn, wheat, pork, etc., as your family can consume, while here it is hard to raise more than sufficient to support the family, we do not see the advantage, if there is no sale at remunerative prices for the surplus. There never was a time in the Eastern States when there was such a general complaint among the farmers, in not receiving pay for their labor, as there is in the West at the present time. The farmers in the East complain of their lot and crops, but it is a part of their education, induced in a great measure by persons who have been fortunate in their investments in the West.

New Hampshire has always been considered by her sister Western States, as cold, rocky and mountainous, with sterile soil, and, in fact, a true type of what a noted western member of Congress once said of her in debate in the National House of Representatives. He remarked that "he could never think of New Hampshire without thinking of bleak, chilly rocks, the screeching owl, and prowling wolf." This libel on our State we are sorry to confess is too often repeated by some of her own sons. If they would cherish their State more, and remember the good old song, "home, sweet home," it would be far better for them, and their mother or adopted State.

The census of 1870, when analyzed, gives some remarkable facts in relation to agriculture in New Hampshire, when compared with that of some of the Middle and Western States, which would be well for every man in this State to ponder, before he leaves New Hampshire for the West, to invest his capital in farming. It should be premised that New Hampshire is a small State, having an area of about 9000 square miles and a population of about 318,000, while New York has 46,000 square miles, Ohio, 39,000 and Illinois, 55,000, with population respectively of 4,300,000, 2,600,000, and 25,000,000. It appears by the census that New Hampshire in 1870 raised of the nine great staple productions of our country, viz., wheat, corn, rye, oats, barley, buckwheat, potatoes, tobacco and hay, in value \$15,239,849; New York, \$151,657,446; Ohio, \$104,727,700, and Illinois, \$137,613,732. The above amounts give to each man, woman and child in New Hampshire, \$47.90; in New York, \$34.71; in Ohio, \$40.00, and in Illinois, \$54.45. In the cultivation of the above crops, it also

appears that New York had employed of males and females of ten years of age and upwards, 374,000, who respectively receive, annually, for their labor, \$395.50

	Number of hands.	Pay for labor.
Pennsylvania	360,000	\$356.56
Vermont	58,000	368.10
New Hampshire	46,000	358.93
Illinois	386,441	356.80
Minnesota	75,157	336.33
Iowa	218,267	312.62
Ohio	397,000	263.78
Wisconsin	160,000	340.67
Indiana	266,777	263.34
Maine	82,111	298.38
Massachusetts	92,810	241.61

It should be remembered that Massachusetts is a small state, very thickly settled and that the farmers are largely engaged in market farming. This establishes our position beyond peradventure.

Let the farmers of this State who are disposed to grumble at our long winters and short seasons for production, and our sterile soil, ponder these figures. Let them consider also that our farmers are enabled to make this showing in the teeth of the fact that manual labor and labor-saving machinery enter more largely into the accounts of western production than with us. Leave these out of the account, or rather add them to it, and the percentage in our favor would be greatly increased.

Again, let us consider that while farmers at the West pursue no other calling in connection therewith, and consequently are restricted to that alone for an income, many of our farmers devote their spare hours, necessarily many in the winter season, and their rainy days to shoemaking or other mechanical pursuits, affording a remunerative return for the labor expended. The farmers in the single town of Northwood earn in this way additional to their farm labor over fifty thousand dollars annually.

It also appears that New Hampshire has animals, viz., cattle, sheep and hogs, enough in value to give each inhabitant of the State \$30.87; New York, \$23.36; Ohio, \$33.15; and Illinois \$33.97. The average number of bushels of corn to the acre in New Hampshire was 36; New York 34; Ohio 30, and Illinois 35. There are, but, two states in the Union that produce as

much corn to the acre as New Hampshire and but ten that produce as much wheat. The average value of an acre of corn in New Hampshire is \$39.78; in New York, \$29.58; Ohio, \$18.72, and Illinois \$12.32. The average value of all crops to the acre in New Hampshire is \$23.76; in New York, \$22.52; Ohio, \$17.03 and Illinois \$12.03. Our farmers now raise in value to each inhabitant of the State more than New York or Ohio and nearly as much as Illinois. In 1871 these staple productions increased in value over \$1,000,000 in New Hampshire, and decreased over \$4,000,000 in Illinois.

But some will say the expense of farming here is greater than in the West or Illinois. To a certain extent this may be true, but not wholly. With everything equal as to farm buildings, location, etc., hundred acre farms in Illinois average one-third more in value than in New Hampshire. An acre of corn in this State on an average is worth three and one-fourth times more than an acre in Illinois. The farmer there must plow three and one-fourth acres, cultivate three and one-fourth acres and gather and husk three and one-fourth acres, and dry and carry to market three and one-fourth bushels, to our farmer one to get his dollar, besides using three times the value of land to produce it. The expense, with everything considered, must be about the same. An acre of corn in our State that was not worth more than twelve dollars, after it was husked, would not be considered worth gathering and would be cut up with the stalks and fed to the cattle. The expense of taking care of cattle and hogs cannot be much more here than there, as we have to take care of one hog to three out west to get the same value of pork.

We shall not fall below either of the above States if we compare with theirs our manufactures, our railroads, our climate and our summer resort for tourists. There is scarcely a town in the State where these tourists cannot be found for nearly three months in the warm seasons. It has been carefully estimated that the people of New Hampshire received nearly three million dollars and our railroads over seven hundred thousand dollars from this resource alone last summer. This summer travel to our State, for health and recreation, is increasing at the rate of twenty per cent. annually.

It has been our good fortune to travel extensively in Illinois, Indiana, Iowa and Wisconsin, and we make the bold statement that you can find more than double the number of farmers in

either of those States that are poor and live in abject circumstances, than you can in New Hampshire. We have seen in Iowa thirty acres of corn sold standing in the field for three dollars per acre. A farmer in this State, with his acknowledged hard lot, would not find the seed and plant it for that price. It is true there are many rich farmers in the West, and where you find one the light is shown to the world by every newspaper and hired correspondent in the West as an inducement for eastern men to come and bring their capital and families to enrich and populate their State. Not so with many of the farmers in New Hampshire. No words come from their lips to recommend their State and induce any one to come here to live. Their recommendations consist only in a chilling look, and a silent shake of the head, enough to say to any stranger, "New Hampshire is a good State to emigrate from."

As we have said, this feeling of discontent and complaining has been schooled and cultivated by a large portion of our people for the past thirty years, and it has become as natural for many as to breathe to speak ill of our native State. It makes no odds how well a man is prospering on his farm, he joins the general cry that New Hampshire is no State for farming or to live in. No wonder that the young men of this State leave their parental home and their native State at the first opportunity when they hear nothing, from the first syllable they learn or lisp, in praise of their State or occupation, but on the contrary the dark side is portrayed in its worst forms, and the bright side of western States is set forth in glittering extremes. They listen with magic spell to the stories of farmers in Illinois having one thousand acres of corn and annually selling five hundred head of cattle, etc., but never hear or try to learn that other farmers in the West will draw forty bushels of corn twenty miles to market, and give their whole load for a pair of thick boots, or that New Hampshire raises sixty-nine cattle to every one hundred of its inhabitants while Illinois raises only sixty-seven, and that New Hampshire raises nine and four-tenths head of cattle to every one hundred acres of farm land, while Illinois raises only eight and eight-tenths on the same number of acres. These are facts that are never considered at the table or fireside, but the favorable accounts are always given about the West. No wonder with this school of education that the farmer and his sons should be led to believe that Illinois furnishes the beef for the world when

they hear these accounts of one man selling five hundred head a year; but the true facts are that New Hampshire, to-day, though considered a manufacturing State, in proportion to its population furnishes more pounds of beef for the market than Illinois, as they also do of mutton, and the supply might be increased twenty per cent. with the demand always ahead if farmers and their sons would see these important questions in their true light.

At the June session of the Legislature in 1872, the House instructed the Committee on Agriculture to report what per cent. of farming paid in this State, and after a careful consultation of nearly two weeks reported that farming in this State paid about two per cent. This must be flattering encouragement for a person to come to this State to purchase a farm!

From 1860 to 1870, according to the last census, our farms alone increased in value two per cent. annually. If the committee meant that a farmer having five thousand dollars invested in a farm, hires a laborer, and works himself through haying, visiting the village or city as often as twice a week for the year round, and supports a family of five, they may be correct in their report, for eight thousand dollars put at interest at ten per cent., with the same hours of labor, would do no better.

If we want our State to increase in wealth and population, we must advertise it by standing by it, and not malign it by saying that farming does not pay more than two per cent. in the State. If a merchant in Concord should advertise his goods in the city papers by stating they were of poor quality, and that every purchaser would get the worst end of the bargain, and praise up his neighbor's goods, you would consider him a fool or a lunatic. But such is the advertisement that New Hampshire gets from a large portion of our farming community with plenty of assistance outside of the State. We would say there are honorable exceptions, but they are *exceptions* and not the rule. We do not wish to be understood that we think that any of our people wish to injure our State or themselves, but as we said before it is done thoughtlessly by a growing habit to depreciate farming in this State and underrate its value, and we feel confident it is doing a great injury, not only to the State but to themselves and their children.

For the benefit of some of our complaining farmers who take agricultural papers printed out of the State and never hear of successful farming in New Hampshire, we will give a few state-

ments how some farmers in this State have succeeded, for no advertisement ever comes from New Hampshire of a successful farmer.

We know of a farmer in Merrimack county who, in 1856, purchased a run down farm of four hundred acres, with the timber nearly all cut off, for \$4,400. Half the farm was interval, and the remainder was pasture and woodland. When he came into possession of the farm, there were about twelve tons of English and about the same quantity of natural meadow, or low ground hay cut upon it, sufficient, with some grain feed, to winter twelve head of cattle, thirty sheep and two horses. He now winters upon an average, ninety head of cattle, six horses, old and young, and one hundred and fifty sheep. Last year he had sixteen hogs about eighteen months old, that would average when dressed not far from four hundred pounds each. For several years past his average sales have been about \$1,500 for beef cattle, \$500 for pork, and \$400 for sheep, lambs and wool. A few years since he sold for slaughter two hundred sheep at \$7 a head, aggregating \$1,400. The proceeds of the farm now are one hundred and fifty tons of hay, eight hundred bushels of corn, eight hundred bushels of oats, and fifty bushels of wheat. He has, during the fifteen years of his occupancy of it, expended over \$4000 in repairing the old and erecting new farm buildings, and has now a larger amount of cash on hand, than the farm originally cost him. This farm cannot be bought to-day for less than \$20,000, and it has paid over twenty-five per cent. annually on the first investment.

Thirty years ago, a gentleman in this county purchased a farm for \$6,000, paying \$2,000 down, being all the money he had. It consisted of four hundred acres, and was badly run down. It is now valued at \$40,000. We know of a couple of men in this State, who last year, on fifty acres of land, raised and sold over \$12,000 worth of produce, and their whole expense, including help, manure, and interest on land, did not exceed \$8,000.

The inhabitants of Grafton County are more generally devoted to agriculture than any county in the State, and is situated in the valley of the Connecticut. The soil of this county is good, but in many parts the surface is broken by mountains producing the finest scenery in this country but causing much territory not suitable for agriculture. Illinois is one of the oldest western States and seventy-four per cent. of its territory is improved, while only sixty-seven per cent. of New Hampshire is improved,

and Grafton County is less than sixty per cent. We will make a few comparisons between the agricultural resources of Illinois and Grafton County. Illinois has sixty-seven cattle to every one hundred inhabitants, while Grafton County has eighty-five. Illinois has sixty-one sheep to every one hundred inhabitants, while Grafton County has two hundred and seventeen. The total value of all the agricultural productions of every nature annually produced in Illinois is \$82 to every inhabitant; the total value of Grafton County is \$102, or \$20 more to each person. Let the farmers in Grafton County put their best foot forward and they can increase this production within ten years twenty per cent. Many of the farms in Illinois, which twenty years ago would yield sixty bushels of corn to the acre, will now yield hardly forty bushels. The prairies in the West will require fertilizers nearly as quick as the new lands in New England.

In view of the foregoing facts, and others which readily suggest themselves, such as superior school and church privileges, congenial society, etc., who shall say "New Hampshire is a good State to emigrate from?" We write this with no disrespect to Illinois for it is one of the brightest stars in the Union, but we cannot see the propriety of a single star being dimmed or stricken from the constellation that others should glisten more brightly. Whether attacked from without or within, we shall stand by our own native State—a State, though small in territory, second to none in this Union in its natural resources, fine mountain, ocean and lake scenery, its climate, its equal laws, its free institutions, and in the virtue, integrity, intelligence and independence of its inhabitants.

In fine, if the farmers in this State will suffer the same deprivations, clothe their wives and children, the same as a majority of the farmers in the West are obliged to clothe theirs, and work with the same zeal, in ten years we shall be able to raise \$60 worth of grain, etc., to each inhabitant of the State, and increase both in wealth and population. But we do not ask them to make this sacrifice, for they can live without it, and enjoy the advantages and privileges of a New Hampshire home, such as cannot be obtained in the West. God bless the farmers of the old Granite State, her hills, her mountains, and her rills.

CENSUS STATISTICS.

In connection with the subject of leaving New Hampshire, we present the following table :

	1860.			1870.		
	Dr.	Cr.	Balance.	Dr.	Cr.	Balance.
Alabama	170	21	149	119	15	104
Arkansas	69	4	65	47	5	42
California	2,552	15	2,537	2,720	70	2,653
Connecticut	1,221	219	1,002	1,688	617	1,071
Delaware	31	7	24	56	14	42
Florida	46	2	44	91	5	86
Georgia	170	25	145	141	50	91
Illinois	7,868	104	7,764	8,213	191	8,022
Indiana	1,072	28	1,044	1,011	32	979
Iowa	3,287	18	3,269	5,057	57	5,000
Kansas	466	1	465	1,158	7	1,151
Kentucky	185	26	159	229	50	179
Louisiana	191	15	176	137	25	112
Maine	12,366	11,405	961	9,753	11,404	*1,651
Maryland	202	50	152	188	84	104
Massachusetts	44,035	19,973	24,062	47,779	16,510	31,269
Michigan	3,482	66	3,416	3,633	89	3,544
Minnesota	2,387	22	2,365	3,272	56	3,216
Mississippi	118	15	103	73	18	55
Missouri	794	8	786	1,384	37	1,347
Nebraska	120	.....	120	419	2	417
Nevada	38	.....	38	289	.....	289
New Jersey	527	92	435	1,202	121	1,081
New York	12,497	2,045	10,452	9,211	2,499	6,712
North Carolina	83	6	77	60	28	32
Ohio	4,111	150	3,961	3,329	212	3,117
Oregon	169	.....	169	219	2	217
Pennsylvania	1,773	227	1,446	1,852	307	1,545
Rhode Island	1,482	637	845	1,242	509	733
South Carolina	60	8	52	35	40	*5
Tennessee	170	6	173	164	32	132
Texas	210	15	195	187	8	179
Vermont	16,682	11,950	4,732	13,540	12,837	703
Virginia & West Virginia	330	71	259	370	186	184
Wisconsin	5,907	85	4,822	4,908	108	4,800
Alaska	.....	.....	.....	.....	1	*1
Arizona	.....	.....	.....	32	.....	32
Colorado	235	.....	235	139	1	138
Dakota	7	.....	7	73	.....	73
District of Columbia	156	12	144	473	34	439
Idaho	.....	.....	.....	54	2	52
Indian Territory	.....	.....	.....	.....	7	*7
Montana	.....	.....	.....	101	.....	101
New Mexico	18	.....	18	18	4	14
Utah	175	.....	175	165	4	161
Washington Territory	68	.....	68	96	1	95
Wyoming	.....	.....	.....	52	1	51
	125,516	47,328	78,188	124,979	46,282	80,361

* Against us, 1,664; leaving a total balance for us of 78,697.

The foregoing table, so far as relates to the census of 1860, was prepared by Hon. Moody Hobbs of Pelham, for the report of 1872, but was postponed until this year that it might be compared with the census of 1870. This comparison has been made by A. J. Fogg, Esq., of Concord. It presents the account of our State at two different periods, against other States for men and women which New Hampshire has furnished, and a credit for those she has taken from abroad.

The account shows that 124,979 persons who were born in New Hampshire are now living in other States in the Union; and that 46,282 who were natives of other States now reside here, showing an emigration against us of 78,697, or a gain from the last decade of 172, and probably without a parallel in any State or nation this side of Ireland. We have in California 176 more persons than in 1860; in Illinois 255; in Iowa 1731; in Kansas 658; in Massachusetts 7204; in Minnesota 841; in Missouri 561; in New Jersey 666; and in District of Columbia 295. While in Alabama there are 45 less; Louisiana 64; Georgia 54; Maryland 48; Mississippi 48; North Carolina 45; South Carolina 57; Tennessee 41; Maine 2612; Vermont 4029; New York 3740, and Ohio 844. This shows conclusively that New Hampshire has not as many carpet-baggers (as men are now termed who go South to reside) in the South by several hundred as before the war.

In 1860 New Hampshire had its population, of foreign born, 20,939; in 1870, 29,611; a gain in ten years of 8,672. In 1870 there were 40,820 persons in the State having a foreign father and foreign mother; 42,862 having a foreign father, and 42,550 having a foreign mother. Of the foreign population, 4 were born in Africa; 2 in Asia; 8 in the Atlantic Islands; 14 in the Australasian Islands; 9 in Austria; 4 in Bohemia; 11,901 white, 2 colored and 13 Indians in Canada; 239 in New Brunswick; 6 in Newfoundland; 514 in Nova Scotia; 22 in Prince Edward's Island; 225 in British America (not specified); 1 in Central America; 5 in China; 5 in Cuba; 11 in Denmark; 60 in France; 436 in all the German States; 2679 in England; 12,190 in Ireland; 892 in Scotland; 27 in Wales; 107 in Great Britain (not specified); 1 in Greece; 5 in Holland; 3 in Hungary; 7 in India; 9 in Italy; 1 in Mexico; 55 in Norway; 2 in Poland; 12 in Portugal; 2 in Russia; 4 in Sandwich Islands; 9 in South America; 9 in Spain; 42 in Sweden; 11 in Switzerland; 9 in Turkey; 11 in West India, and 11 at sea.

The census shows that this State in 1870, in striking the balances, had, born in other States and foreign countries, 8500 more people than in 1860, and still our population decreased 7473 from the last decade. We cannot solve the problem, and it will be hard to induce people to believe that for the past ten years 15,000 more people have died in the State or moved into foreign countries, than have been born for the past ten years, if we do take into account the fearful loss of life in the late rebellion. If this is the fact, it is worthy of the serious consideration of every thoughtful man in the State. The natives of New Hampshire can truly be classed with the lone Indian, for with a loss at the same ratio for the next fifty years, not a vestige of pure, original New Hampshire blood will be left that run in the veins of our forefathers one hundred years ago.

COMMENTS ON WESTERN EMIGRATION.

BY HON. L. D. MASON, TAMWORTH.

I was born away up here in Carroll County; not only among the Granite hills generally, but among the sharp and craggy hills of Carroll County especially. I used to hear western travelers tell about the fertile fields of the West and the salubrious climate of the South, and I really thought God had dealt partially with his children and unkindly toward me and my Carroll associates. But four years' experience at the South convinced me we were not so unequally dealt with. When I witnessed the lakes of mud that covered old Virginia from the first of January to the first of April, I longed to be among the snowdrifts of New Hampshire. When I saw the vast forests of oak that covered the dismal swamp within a few miles of the Portsmouth Navy Yard, and knew there were agents away up here in New Hampshire getting timber to be used in that yard, I thought it was a pity they could not have a cold snap, and freeze up those lizard and alligator bogs so they could get the timber off. And then, as for the cold, although it was not cold enough to freeze up bogs, I saw more suffering of animals with cold each week of winter in Virginia than I ever saw in New Hampshire in a lifetime.

It was my privilege last autumn to spend a considerable portion of October west of the Mississippi. I carefully examined the farming operations of the West, and from the most approved western farmers I took accurate accounts of costs and profits. I found as a result that there were classes of men that might gain an advantage by going West; there were other classes who would suffer. If a man was very poor and had a large family to feed from his own daily earnings, and was not particular about their privileges, he could certainly get more bread for a day's work at the West than in New Hampshire. If he had a few hundred dollars in early life, and was willing to sacrifice the advantages of civilization, he could go beyond it and take up land at government prices, and *den* on it and associate with the animals, and by and by civilization would overtake him, and he would get advances on his original purchase. When you talk of western farming for immediate profit, you are altogether on the *wrong track*, and so I will give you a few of the results as given me by the experimenters themselves.

There is plenty of land already broken to rent for one-third of the crop. Two men enter and rent one-eighth of a section or eighty acres. This, they claim, two good smart men will manage through the year to corn which is the most remunerative crop. The average yield of the best farming sections for ten years is thirty bushels per acre, or two thousand and four hundred bushels, one-third of which is deducted for rent, leaving sixteen hundred bushels of corn for the year's services of two men, the average price of which for ten years together is twenty-five cents per bushel, or four hundred dollars for the two men a year, they finding their own teams and machinery and working one-third more hours than New Hampshire men labor, and almost entirely dispensing with the privileges of civilization.

I visited what was called the best or model farm of Roane county, Iowa. I found a single field of corn containing two hundred acres and averaging sixty bushels to the acre. This is a very rare occurrence, even in Iowa. The occupants were two brothers by the name of Ovat, from New England. They also raised three hundred bushels of wheat and one thousand bushels of oats. Besides themselves and sons, they employed four extra men six months in the year, which cost them about \$140 in the aggregate per month, or about \$840 per year. They worked constantly three teams. They were buying rather than selling corn,

and paying fifteen cents per bushel, which was all corn was worth in Iowa. They had one hundred and thirty-three cattle they were feeding, the average live weight of which was one thousand two hundred pounds. They expected an advance on their beef that would make their corn net them much more than fifteen cents per bushel, but that was an uncertainty. Their farm comprised a section, or six hundred and forty acres. They claimed it was now worth \$18,000. I asked them how they made their money. Their answer was they left New England when young, were mechanics, took some property with them, went to Ohio, worked at their trade, increased their means, went to Iowa seventeen years ago, bought their land mostly for \$5 per acre, and had lived there seventeen years without privileges, working hard and economizing closely. When Roane county was settled, the railroad happened to come near them. Their locality was well selected, their land had become worth \$30 per acre. But they were careful to say if a man is comfortably situated in New Hampshire, and is enjoying privileges, he had better let well enough alone and stay there. And while they were speaking of New England and its privileges, and recounting their toils and sacrifices, their countenances would seem to express the language of the poet to the backslider :

"What peaceful hours I once enjoyed,
How sweet their memory still;
But they have left an aching void
The 'West' can never fill."

I honestly believe I can get more ready money to lease one of the cast-off farms of New Hampshire, and cultivate it with potatoes, than I could to lease any farm west of the Mississippi.

Farmers of New Hampshire, let me say to you, if you will live in huts instead of houses, work like slaves the year in and out, never allow yourselves to look up to the sun or into a book, work your children like mules as soon as they can lift an implement, instead of sending them to school, let your whole wardrobe cost less than thirty dollars, and everything else in proportion, you can make more money than does any western farmer. But rest assured your posterity will not be the class that shall by and by go West to take the lead of civilization. Had you not better be content to keep and improve the old homestead, so near to the school-house, where you can hear the church bell, and where you can enjoy the association of good neighbors? I have decided on this course for myself, and let those do better who can.



PIGEONS. (3) Sabinets. (4) Blondinets, Blue.

FARMING — PRESENT AND PROSPECTIVE.

BY JOHN F. FRENCH OF NORTHHAMPTON.

For a few years past, the farming interest of New England has been greatly depressed. Many of our farmers have become discouraged with their prospects in farming alone, and are turning their attention more or less to other pursuits, so that in instances not a few, farms are being neglected, farm buildings are becoming dilapidated, and much of our landed property deteriorated in value.

This state of things resulted partially, no doubt, from causes beyond our control, and partly within it. Among those beyond our control, perhaps we should instance, as first and foremost, the high rate of taxation. Farmers have been taxed internally, externally, and eternally, until they groan under its accumulated burdens. For several years past, certainly since the close of the war, no class of property or branch of industry has paid so high a percentage, for the amount of income received, as farming. In almost every farming town, individuals may be found with little or no *visible* property, living at their ease and leisure, and frequently growing to affluence even, on a few thousand dollars invested in non-taxpaying stocks, while good farmers near them, with no property aside from their farms, and perhaps in debt for part of that, with families to feed, clothe, and educate, if they can, work hard for a mere subsistence. Local taxes and government taxes weigh them down like a millstone. With little prospect of immediate relief, is it to be wondered that farmers thus situated grow uneasy?

Another cause of discouragement beyond our control, is the general scarcity, and consequently high price, of farm labor, thereby enhancing the cost of production to such a degree, as to leave little or no margin for the owner of the soil. It seems to

be acknowledged as a "fixed fact" that few farms at the present time are so favorably located, or so productive, as to be made to yield fair profit, operated wholly by hand labor. To the scarcity of farm help must be added also the very general inefficiency of laborers, so that much of the labor employed is either ill-directed, or so slovenly performed, that little or no actual profit results from it to him who hires.

A further source of discouragement without remedy of our own has been unfavorable seasons. Two seasons of extreme drought, followed by two severe winters with little snow, so injured the grass roots as to greatly lessen our hay crop, and cut off the feed from our pastures, thereby undermining for the time being the whole foundation of New-England farming. This general scarcity of feed necessitated a corresponding reduction in stock, which, in many cases was sold at prices ruinously low, so that many farmers came out of it reduced in almost every essential to good farming success, forage, stock, money, manure, and capability of soil to produce further crops. Among those obstacles or causes of discouragement within, or partially within our control, may be mentioned the growing tendency among farmers, as others, to extravagance, or living beyond their income, or means. One of our wisest and shrewdest farmers of a past generation remarked to a neighbor, "when you earn nothing, be careful that you spend nothing." That rule is now quite frequently reversed; while earning but little the inclination often is to spend the more. Farmers and farmers' families are imitating more and more the habits and fashions and extravagances of city life. They look abroad for much that their own farms and households should provide. Many farmers, it is true, are already independent, and can do as they will. Some have acquired independence by their own earnings, some have inherited the accumulations of past generations, which, added to their own, furnish capital on which they can draw at pleasure; then, again, there are others, who, if not rich in money, hold large tracts of wood or timber, which are always available in case of need. But not a few who are favored with neither of these sources of income and depend entirely upon what they can draw from the soil, are actually drifting backward, and partly because their wants, real or imaginary, outrun their earnings.

Then again farmers are shamefully, lamentably, sometimes almost ruinously humbugged. All classes it is true are hum-

bugged to a certain extent, but farmers in my view suffer themselves to be fooled and swindled in this respect to a greater degree than any other class in the community. They are humbugged in seeds, humbugged in manures, humbugged in agricultural implements, humbugged by agents, humbugged by patent peddlers, humbugged by store-keepers, humbugged by politicians, humbugged by corporations, till finally, some of them are in danger of becoming little less than humbugs themselves. If I could by my pen so reach and influence the whole farming population of this country as to stop one tithe even, of the amount annually lost from sheer humbuggery and swindling, the farmers themselves could afford to pay me a larger salary than is paid the Agricultural Commissioner at Washington. But, alas! in this respect the farmers won't learn except by the "things they suffer," and so it goes on. Millions on millions are thus absolutely thrown away in this country every year. If farmers have money to give away let them give it where it will do some good, not put it into swindlers' hands to dupe them still again. I here give a paragraph just clipped from a paper, as a good backer to what I have said:

"A correspondent of 'The Maine Farmer,' vouched for as one of the most esteemed citizens of one of the most enterprising villages in Cumberland County, gives it as his candid and deliberate opinion that the Maine farmers are annually swindled to the amount of more than \$50,000 by patent peddlers, who sell to them improved churns, washing-machines, etc. He relates a singular fact in regard to his own town. A teamster, employed by most of the families there when moving, informs him that about half of them leave behind them a patent washing-machine or churn, for which they paid \$10 or \$15, and which experience has taught them is not worth the cost of the removal. He says the following rights of territory in patent machines have, within three or four years, been sold in his neighborhood, viz: Patent churns, \$10,000; corn-shelling machines, \$5,000; washing-machines, \$2,000; besides other patent rights to the amount of upward of \$5,000. Nothing has ever been realized for these sales by the purchasers, and there is seldom a sitting of the courts but some of these swindling cases are on the docket. In addition, he says that over \$50,000 of worthless oil stocks were disposed of within the same period. He adds that what is true of his own town is true of nearly all the large and 'smart' towns in the State. It doesn't strike us that farming is so lucrative in Maine that farmers there can safely indulge in the pastime of playing at ducks and drakes with their money. If they can, let them go ahead."

Now in view of the many obstacles to progress from within and from without, what are farmers to do? Shall they fold their

hands, cease effort, and let matters drift as they will regardless of consequences? or, shall they rather renew their efforts, rectify mistakes, and push forward with redoubled energy and forethought. Is it manly or wise to despond, and suffer our noble heritage to go to waste? Most surely not. With courage, discretion and pluck, obstacles vanish like magic. Let us light again the lamps of industry and economy, and many of these drawbacks to our progress will pass away; some of them are already disappearing without our effort. The past season has been highly favorable. Rains have been abundant; the grass roots are in good measure restored; our lands the past winter have been protected by snow, and the future prospect for fields and pastures highly encouraging.

Farmers need to give more close thought to their business. In order that they may farm more skilfully and to greater profit, horse power must take the place of man power to a far greater extent than is now practiced, and brain power must guide and control the muscle. We need to economize all our affairs, make the most of our resources, and see that nothing is lost by neglect. Stock, fowls, swine, every thing that adds to our comfort and ministers to our wants should receive close attention and care. We should purchase only such implements as we need, and are proved to be payable, and then should be kept well housed and in good repair, indeed, everything in and about our premises should look trim and in good order. From fifty to a hundred dollars a year is lost to many farmers by simple neglect in trifles. Above all, drain your wet lands, and manufacture as far as possible your own manure. I have made it a rule on my own place to turn over no more sod land for planting purposes until I have underdrained the wet portions, nor purchase any more artificial manure than what is absolutely necessary to make up a deficiency, after manufacturing all I can at home. I have lost months of labor, and hundreds of dollars, by trying to cultivate and make sweet grasses grow on wet lands, and hundreds of loads of manure by applying it to water-soaked soils. I have experimented with commercial fertilizers enough to satisfy me that they are uncertain at the best, and sometimes quite unprofitable. No farmer should purchase until he has exhausted his home resources, and then only such as has been proved reliable and good. I would impress upon farmers the importance of saving all their home-made manure, liquid as well as solid. I apprehend there is more waste from

this one source than any other at the present time. If we could see our actual loss in liquid manure alone it would astonish us. Be assured, farming without manure will not pay. Finally, make your farming so pleasant and your homestead so attractive that your boys, and girls too, will be attached to it, and glad to remain on it. It has been proved beyond question that there is no stock so good, or labor so effective, (if rightly trained) as that of your own raising, for your own farm, whether in the house, or on the homestead. Farming ought to be, and rightly conducted on good land, is undoubtedly the first and best of all employments to him whose tastes are suited to it, and who enjoys the occupation. Every man indeed, whatever his calling, should interest himself in agriculture as the "foundation and corner-stone" of all other pursuits. He who would degrade farming, inevitably degrades himself. From this source almost solely he draws his daily sustenance.

Picture to yourself the owner of a good, substantial, well inclosed, compact farm, with good convenient buildings and all necessary and useful implements of husbandry in good repair, whose stock, like his farm, shows high cultivation and care; see him and his family in the possession of sound health, free from debt, with a few hundreds, or thousands even, in cash capital, on which he can draw if necessary at pleasure, how safe he feels; how free from anxiety and care; his calling is honest, his habits industrious, and his morals above reproach. Where else can you find enjoyments more pure, or comforts more substantial and enduring? Where can children be better trained, or old age find sweeter repose? Contrast this with the ten thousand nobodies and genteel hangers on, who cry down farming because there is work about it, who skim over a profession because there is a name to it, who strut about, or ride about with all they hold of this world's goods, and seem to imagine that they have rights here of their own procuring. Not so. They are in the way. They are drones in the hive. They live by others' toil. They are not simply inconveniences, encumbrances, but absolute nuisances, a disgrace to themselves and a burden to those that carry them.

I would not detract from any honest pursuit well followed. Other stations must be filled, and other callings have their true position, but he is a poor apology for a man who would degrade farming, or feel himself degraded while engaged in it.

We live in a world of sharp competition, and farmers must learn to take care of themselves and their own interests. We should encourage those writers and publications that sustain our calling, and we should select legislators who will be sure to guard our interests and defend our claims. When we watch and scrutinize the acts of our legislators with that keenness, precision and determination that our manufacturers, merchants and boards of trade now do; when we understand as we ought the vast power in this direction at our disposal when rightly and wisely directed; when we instruct our public servants that their first duty is to sustain and guard that interest which lies at the foundation of all other interests; when we insist that our railroads, canals, telegraphs, manufactories, steamboats, etc., shall subserve the interests of the laboring multitude, rather than merely to fill the pockets of the already pampered few; when we frown down those gigantic schemes of plunder and corruption that now exalt themselves on every hand; in short when we remember, what we seem to have forgotten, that the people, and not money, are the rulers in this country, then, and not till then, will the farmer occupy his true position. Then we shall not ask "will farming pay?" Then we shall not need to urge our sons to stay on the farm, nor our daughters to marry farmers. Then farming will be respectable, and honesty in demand. Then swindling will be disreputable and dishonesty a drug. Farmers I am confident are arousing themselves from the lethargy of the past, and are looking forward with hope to a more glorious future. They begin to realize somewhat the position they occupy and the power at their command, when concentrated and wisely controlled. Leading minds in every state are interesting themselves more and more in the farming interest, and are already laboring manfully in its behalf, and I trust the day is not distant when farming shall rank, as it truly is, among the "noblest of callings and highest of arts."

IMPORTANCE OF SAVING THE ELEMENTS OF FERTILIZATION.

BY J. FRANK LAWRENCE, OF EPPING.

It is an universally acknowledged fact that the lands of the eastern and southern section of the American republic are growing poorer.

The original fertility of the soil was in many sections long ago exhausted, especially at the South where the planters have sown and reaped for generations, with no attempt to keep up the fertility of their soil, but moving to new lands, as their old ones were exhausted. At the North we have done a little better, but not much in some sections of it.

The Yankees, as a class, are thrifty and saving, but no people in the world are so negligent in saving, or so lacking in intelligence in regard to application of manures as they are, although at the same time acknowledging its indispensable value in raising paying crops or keeping up the fertility of the soil.

Too many of us are to-day looking with unfavorable eyes toward the introduction of Chinese laborers, and yet the most ignorant of them all can give needed instruction to us regarding the saving, composting and application of manure. I really believe that one of them can raise enough upon a single acre to sustain himself and family, so far as such products usually go, and with the aid of no other manure than that our American farmer yearly suffers to run to waste, viz., night soil, sink water, ashes, poultry manure, bones, etc., scrupulously saved and composted. And now when the fact stares us in the face that in New Hampshire one hundred and fifty thousand dollars are yearly paid for commercial fertilizers, and that to parties without the State, I

submit is it not time that we commence to save and properly use all the elements around us, to save this yearly expenditure and to make an effort to have our country more fertile and more beautiful. That this can be done, the history of other countries and sections of our own have proved. Twenty-five years ago, European fields yielded scarcely half their average yield of to-day, and ten years ago the same was true of the famous Mohawk and Genesee valleys of our own republic. True, a year ago, the farmers of our State who felt despondent, after bare winters and scorching summers, and as they looked upon their brown fields and empty barns, might be pardoned for saying "farming does not pay."

But to-day, I feel this despondency has passed away, and that the farmer as he looks upon his fields and pastures, all green again, thanks God for them and looks forward to a brighter future, feeling sure he shall reap where he has sown, and gather where he has planted.

Years ago I listened to a discussion by intelligent breeders, and one of them asserted that he could not only breed a cock with one white feather in his tail, but that he could have that feather in just the position in the tail he desired it. Now, I did not believe all that exactly, and still my own observation has convinced me that intelligent breeding will accomplish wonders, and what is true of breeding is more than true of intelligent farming; and as I have often witnessed these results, I have earnestly desired that intelligence might be more generally diffused among the people, and in no particular are we all more deficient than in saving and applying manures.

The term "making manure" is only a figurative expression, as is generally used among farmers, but it is literally true we can increase to an almost indefinite extent the manures all our farms need by simply saving and properly composting all the elements to enrich our soils that are lying upon it or about our buildings. The English farmer would almost as soon scatter his hard-earned shillings from his door as suffer to run to waste the water from his drain and sink. How many not only make all their ashes into soap and buy more soap, and yet let all the resulting suds run to waste and the only result shown is a rank growth of weeds in the back yard, or too often in the front yard, which all of the farmer's family term a nuisance; while the ashes remaining are too often entirely wasted by not moving them a rod from where the lye was drawn off, and where the soil was already rich

enough, or misapplied entirely, or mixed with manure where they are useless, and where the remaining alkali in the ashes liberates and draws away the ammonia and other valuable properties of the manure with which it is mingled. I would as soon sell the family Bible as the ashes I yearly make, and I prefer to buy my soap, that I may apply the ashes in all their strength to land so hungry for potash as nearly all our land is. Once in a while I hear a farmer say that ashes don't do any good on his land. The same farmer don't need a Bible in his house, for his family are good enough already. Ashes are nearly a complete manure, supplying nearly all the needs of the soil, but even if they did not do this they have a most beneficial physical influence on the soil, especially heavy, tenacious, clayey soil, making it more friable and setting at work certain elements in it which are dormant till put to work by the action of the ashes. I have applied ashes to every variety of soil upon three hundred acres of land, and sooner or later they have always shown remunerating results. I deem every bushel of good ashes worth fifty cents to every man who has land, and I would as soon encourage a man who had the small pox to come into my door-yard, as he who comes to buy them.

Almost every farmer can, at little expense, convey his sink-water by pipes to his pig-yard, in which he at least once a month, puts old muck, rotted turf, and all the vegetable matter he can collect for an absorbent. The moisture from the sink hastens the decomposition of the vegetable matter, and in one year he can draw from his yard, if properly attended to, an amount that will surprise him, and of such strength as will grow any crop he may desire to raise upon it. If the farmer is so situated that he cannot conduct the waste water to the yard, let him follow the example set at the Asylum for the Insane, and build a cistern at some little distance from the house, at which the sink-water, urine, and all slops from the house are put, and absorbents added every few days. Every farmer who tries this method, will after a few years' trial, be perfectly surprised at the results, and as he makes such a cistern a receptacle for all the vegetable rubbish about his buildings, the consequent neatness is ample payment for the trouble and expense incurred, to say nothing of the actual benefit derived from it.

The benefits resulting from the application of bone, are too well known to be more than mentioned by me, and still how few families save them, but throw them away, where they are kicked

around as unsightly things for years, or are picked up by boys to sell, from whom they find their way into the hands of fertilizer manufacturers, who very kindly return them to the farmer for more than twice the price per pound he has given the farmer for them. Now I do not come to you with any recipe for making superphosphate and do not think you can ever successfully compete with manufacturers, with all their facilities, still I tell you your interest demands your keeping all your bones, placing them in barrels, with your own strong ashes kept moist, and although the process of decomposing the bones may be slow, it will be accomplished by the time planting time comes around, and you will have something, which so far as it goes, is all right for your soil and crops, at little cost and with no adulteration.

How few of our farmers ever take care of their poultry manure, but let it waste away. I have seen many careful farmers, who keep large flocks of turkeys, build roosts in open air, and upon passing such roosts the next spring have seen long ridges of the manure, whitened, and with its value all gone, washed away by the snows of winter, and its ammonia carried off by the sun and drying winds of spring. And yet the same farmer will hurry to the country store when he plants his corn, and buy a barrel of phosphate, but complaining of the price and of the necessity which compels its purchase, which would not have existed had he not overlooked the means at his command, and have prepared upon his own farm the stimulant his crop needs, in the bones, ashes, and poultry manure to which I have just alluded. I cannot leave this part of my subject, without adverting to the practice of farmers of mixing the poultry manure they do save, with the ashes they make, which is all wrong. The chief value of the manure is its ammonia, which is the costliest ingredient of any manure, which accounts for the high cost and really high value of Peruvian guano. The alkali of the ashes will liberate and drive off the ammonia of the manure, and although some farmers will say that they have derived benefit from the application, still they would in most cases have derived equal benefit from the application of either alone, especially from the hen manure properly composted with moist rotten turf, a month before using, to which a little plaster has been added to fasten the ammonia.

While manure thrown from the barn does not suffer much damage during the winter months, still no farmer can afford to let it lie there under dripping eaves, a moment after sunny days and

drying winds come. Such manure, if used green, should be used as early in spring as convenient and made as fine as possible. It should be buried in depth in proportion to its coarseness and freshness. When it does ferment, let it occur when buried a sufficient depth for the soil over it to hold the ammonia escaping during its fermentation, or else a large portion of its value is lost. But green manure is not good for grain, for although its ammonia will cause a large growth of straw, the manure will not ripen in time for the seed's use, and the phosphoric acid, so needful for the perfect development of the seed, will not be furnished in season for it, though there for succeeding crops. I believe the farmer's interest demands that the manure in his heaps be thrown back in his yard, and covered with rotted turf and muck, and allowed to ferment in his yard, with sufficient soil over it to secure all his ammonia escaping during fermentation and upon which absorbent is deposited the manure and urine from the stock yarded in summer. During these times of high priced labor I have tried to economize it in this way. I have broken up my land for corn, never planting but one year to get over the land oftener, late in the autumn, and drawn four cords of this old manure upon it and harrowed it in. The freezing and thawing of fall and spring will carry its strength into the soil just right for the corn roots the next summer, as all manurial sustenance to crops comes in liquid form. In spring, after the land is nicely cultivated, I start the corn with something made as I have described, or purchased. I have proved by my own experience that the same amount of manure will give much better corn in this way, than if drawn out in heaps and in spring time shovelled again into carts and put into the hill, or spread and harrowed in. How much labor is saved by this process any farmer can calculate, and the drawing is done in autumn when he has more leisure. The next autumn after taking off the corn, plow again and dress liberally and slightly harrow and in the spring with a steel-toothed cultivator or Share's harrow make the ground mellow and lay down to grass and grain. By this way, applying the bulk of the manure when laid down, the land will bear good grass for years, and good grain the first year, because the manure applied, no matter how much, is fermented, and its strength in the soil ready for the roots to find it.

A cow yearly makes twenty thousand pounds of solid manure and eight thousand pounds of urine. In order to determine the

amount of solid excrement of the cow, the following experiment was conducted with great care at the barn connected with the print works of the Merrimack company in Lowell.

A single cow, being only an average producer of the article in question, was selected from the fifty cows kept at the establishment. She was fed as usual, and as the others were. The food and water were weighed for seven days. She consumed of water, six hundred and twelve pounds; potatoes, eighty-seven pounds; hay one hundred and sixty-seven, a total of eight hundred and eighty-six pounds; and voided free from her liquid evacuations five hundred and ninety-nine pounds of manure, showing that she prepares daily from twenty-four pounds of hay and twelve pounds of potatoes about one bushel or eighty-six pounds of clear manure. This experiment continued through the year would give over thirty-one thousand pounds of excrements, the product of one cow.

Exact experiments show that the horse only gives a trifle over half the amount in weight of the cow in solid excrements, and less than half in liquid.

Saxon and Belgian farmers not only carefully save all the urine but consider it as valuable as the solid excrement. This eight thousand pounds of urine dried or evaporated gives over six hundred pounds of dry, solid matter, worth more than Peruvian guano by actual chemical analysis. Six hundred pounds of Peruvian guano costs twenty-four dollars in Boston, with freight in addition here. Now, I submit, if with this fact staring us in the face, can the farmer who only keeps one cow afford to lose so much, and if he keeps more does not his interest demand that he take immediate measures to save it.

On page 171 of the Muck Manual, Dr. Dana says, "The same weight of a cow's urine gives over twice the amount of ammonia the solid excrements do and more than that proportion of all other valuable salts, and which if properly saved by absorbents will produce effects as lasting as from the solid manure." The same author further says that a cord of good dry loam or muck saturated with urine, is equal to the same bulk of solid cow manure, and that in one hundred pounds of the urine there are thirty pounds of the most powerful salts ever used by the farmer.

Had the farmers now hearing my voice seen the results I have on experimental farms where solid and liquid manure were tried side by side, their first labor on returning to their homes would

be to take immediate measures to save every drop of their liquid manure. The potash in the food of the cow is carried off by her kidneys into her urine and is extremely valuable.

The urine makes vigorous growth of stalk and leaf and the solid excrement contributes more to the formation of the seed. Still all farmers know how impossible it is to raise heavy corn, without nearly corresponding stalks. Hence, urine and solid excrements together make a manure absolutely essential to a good crop. Now, how shall this urine be saved?

A cellar under the barn, with plenty of absorbents in it, and especially under the cattle, is the best and cheapest way to save it, and the results from such manure show its value. When there is no cellar, the tie-up floor should be yearly taken up and the manure under it thrown out and new absorbents replaced and in rainy autumn days when time can be spared for it. A still better way is to have good muck and rotted turf dried in the summer and put where it will not freeze and put under the cattle every day. In this way the urine can be saved, the manure heap wonderfully increased and its value very largely increased as well. You may depend upon it that the time is coming when this liquid now so generally wasted will be saved, and a little intelligent reflection will convince the farmer that he had best begin the saving process without a moment's delay.

In England the farmers have the urine run into cisterns and in summer pump it out, and by conductors send it all over their yards, where the manure is covered and mixed with absorbents and on top with strawy matter which helps retain the moisture, so essential to the ripening and decomposition of the manure.

You will have noticed that I have often adverted to rotten turf as an absorbent. Good muck is really valuable, but really good muck is not plenty and where it is not, I cannot too strongly urge farmers to plow up low places of good turf, three or four inches thick, and full of vegetable matter and use it for an absorbent. Places on every farm can be selected which are really rich, and a year's stock should be kept on hand, plowed and piled up, that it may get nicely rotted.

I do not exactly believe in the customs of some farmers who frequently plow up their yards during the summer, unless they are nearly all absorbents, for it brings up to the hot sun and drying winds the manure, and a large portion of the manure escapes. In such cases a new coating of muck or mould, or

strawy matter should be applied on top to hold the valuable part that would escape. The old maxim of the peasantry, "that whatever stinks is good for manuring," and their belief that whatever escapes in this way by exposure, was just so much lost from the original value of the manure, has since been endorsed by the most intelligent chemists and agriculturists of the old world.

When manure is purchased the farmer can afford to pay at least a third more for properly preserved old manure. I know of two instances which convinced me that coarse green manure shrunk nearly one half where thoroughly ripened in a cellar. The effect of this manure was wonderful, being thoroughly rotted and concentrated.

Farmers too often overlook the fact that manure is valuable in proportion to the feed of the animal producing it. The farmers in the tobacco raising region upon the Connecticut river, who value manure so highly as to pay twenty dollars per cord for it, appreciate the difference in value better than any class of men before. They buy and stall feed oxen and sheep, and give them as much meal and oil cake as they dare to, and mainly for the manure obtained. And they preserve it as carefully as their government bonds, or stock certificates.

Farmers are beginning to realize that a large pile of manure made from feeding meadow hay alone is not very valuable, and this consideration alone, if not the additional profit to the stock, will ere long induce the feeding of meal in small quantities, where the value of the manure is appreciated.

Farmers are learning, too, that notwithstanding however nicely the stock is kept, the value of the manure is considerably dependent upon the condition of the animal making it. If the creature is young and growing, the value of the manure is decreased in proportion to the value of the feed going to the growth of the animal, for it is plain that whatever goes to the growth, cannot pass off in the manure. Breathing, sweating and working also lessen the value of the manure. It has been proved by repeated and exact experiments that from one-fourth to one-third of the value of the food of a cow while in milk goes to the production of the milk and is consequently just so much less valuable as manure.

Experience proves that there is no surer way of deteriorating a pasture than by keeping milch cows in it, while sheep benefit it

most, partly from the fact, that they eradicate much vile stuff, distribute their manure more evenly, which is very valuable, and choose knolls for resting places, where the manure is most needed.

Analysis shows how much phosphate is sold from our pastures in the milk, and a cow eating bones so greedily, when running in old pastures, shows she is trying to supply herself with the phosphate the bone contains, but which the old pasture feed does not supply in sufficient quantities, because it has been exhausted before. We cannot afford to enrich poor pastures anywhere, but we can take a different course with good ones, especially if in good locations, to prevent their deterioration, if not their improvement.

While upon the subject of manures, I may be expected to say something in regard to commercial fertilizers and the substances from which they are made. Bones, one of the chief ingredients of all really reliable commercial fertilizers, have twelve times the forcing power, and over one hundred times the seed forming properties of the same weight of barn-yard manures. Their value has been appreciated for many years, and they are not only growing higher in price, but actually scarcer the country over. True, scientific men tell us that in South Carolina and some other places, they have discovered phosphatic rock, that is almost equally valuable with our cattle bones, but I always have and do now entertain much doubt in regard to their statements in this matter. That they contain some merit and indeed large quantities of phosphoric acid is true, but the ammonia for all manures made with them has to be supplied with something else and the interest of the purchaser requires that this, the most valuable ingredient of all, should be of comparatively lasting quality. A man may get so as to feel pretty well by drinking New England rum, but his exhilaration and strength will not be so lasting as if derived from a dinner from good roast beef.

Bones, simply ground, have all their virtues in them and are not only rapid forciers, if ground fine enough, but are lasting. But when the gelatine has been removed for other purposes, the nitrogen goes with it and they are less valuable, in proportion as their manurial value has been extracted from them. Scarcely anything but bare phosphate of lime is left in such cases, which is a good manure if bought cheap enough.

Many farmers think that by buying ground bone they escape the fraud they fear in phosphate, but it is as easy to cheat in one

case as the other for several reasons. The only safeguard the farmer has is to buy of reliable manufacturers, whose reputation is their guarantee for the future, to have all needed laws and then by their intelligence avail themselves of the protection the law gives them. I sincerely hope that the farmers of the State will all read the law enacted at our last session of the Legislature and then insist upon its strict enforcement. While it will not perhaps drive all poor fertilizers from the market, still it will force the manufacturers to mark their goods correctly and then if the people are cheated, it will be by their own fault, or from their lack of intelligence.

Manufacturers are seeking to have their products show great results the first of the season and consequently are making pure bone meal give place to too much nitrogenous matter, which is rapid in its action and equally rapid in its exhaustion. Both the cheapness with which this nitrogenous matter is supplied and a desire to show satisfactory results early in the season, is leading to the deterioration of the fertilizers put into our markets.

I have often proclaimed my faith not only in the forcing but lasting power of a properly made superphosphate. I continue in the same faith, but I base it upon a fertilizer made of pure bone, made soluble with sulphuric acid, and ammoniated with Peruvian guano, where the bones do not furnish enough of it. The nitrogen in the bone and that furnished by the guano will be lasting, while the phosphoric acid in both ingredients will be of great value as seed producers, and the phosphate of lime from the bones will last as long as any reasonable man's expectations will demand. While a phosphate made of these materials may not show such tall cornstalks in July, it will show heavier ears in harvest time and will fertilize the ground also for succeeding crops.

I have felt in the past that in advocating the use of commercial fertilizers, I was advocating the interests of my brother farmers of the State. I shall feel it a duty equally incumbent upon me as an honest man, and as a member of the Board of Agriculture, to inform the people of danger in the future, and I tell them that I will never put my own interest before theirs, but will be always ready to warn them of adulterations beforehand, when it shall come under my observation. I have alluded to the depreciation that must attend the introduction of too much nitrogenous matter, not because it is done to any great extent now, but the prac-

tice is increasing, and if too largely increased will result in loss to the purchaser, unless the price is correspondingly reduced.

In closing this portion of my subject I will quote from the statement of one of New York's most respected agriculturists, in support of my statements regarding the lasting properties of bone as a manure. He says:

"I know of a field that has been cropped for thirty years, and it is now in a high state of fertility. The surrounding fields are nothing like it and with similar cultivation would by this time have been utterly impoverished. The former is the site of an old Indian burying ground and when the county was first settled was indented with graves within six feet of each other all over its surface. The dead were buried in a sitting position, not over one foot below the surface, and when a boy I have many times filled my pockets with beads and arrow-heads turned up by the desecrating plowshares. The half-decayed bones of the aborigines are this day to be seen mingled with the soil, and, sad as it may seem, furnish successive crops of grain and grass. If the soil at any time gives signs of impoverishment the occupant merely ran the plowshare a few inches deeper, and turned up a few more Indians. The melancholy truth cannot be gainsayed that the ashes of a former race of men are to this day enriching many of our fields—as well as those of another continent, and the fact thereby established that animal remains are of lasting benefit as an element of fertility."

While attending the meeting of the Maine Board of Agriculture this autumn, an intelligent gentleman said that there were farms in Waldo county, which had paid for themselves three times over, some by raising hay and others by raising potatoes for sale, but said that those raising hay were in much the best condition, in which he was sustained by every one present from that county, who spoke upon the subject. My own experience accords with the statement, and I only mention this here to warn our farmers from their practice of raising this crop, with no return of fertilizers.

In company with the Board of Agriculture, I went in August to the extreme northern portion of our State, and I confess that I was surprised at the beauty and fertility of those new lands. They raise potatoes there largely, for starch making. I only dare venture the hope that the people there will pause long enough to inquire whether they can afford to continue the system, when looking to the future prosperity of the beautiful section of which they are so proud, and of whose resources we know so little.

I regard plaster as one of the cheapest manures for almost all kinds of land, that is offered in our markets. It is nearly half

lime, and where land is deficient in lime, it is a cheap way of supplying it. The other half is sulphuric acid and hence its value on sandy soils, or soil full of vegetable matter or where clover is growing and nitrogen is escaping from the decomposition of the vegetable matter in the soil, for the acid arrests and fixes the ammonia. As clayey soil has more potash, and less vegetable matter, there is less ammonia arising and as a general thing, plaster shows less results here.

I think plaster pays abundantly when sown on most lands, with grain and grass seed, and I have found places in my pasture, where cold moss grew and where a liberal application of plaster in spring brought in clover quite thickly. It does well sown in early spring on knolls about the field, if already in grass. It is a mistaken idea to think plaster does well only in dry seasons. It is nearly the reverse, for it takes nearly four hundred times its weight of water to make it soluble, in which case only it is available for the growth of anything.

We have yet to learn the value of the organic matter in the turf. I attribute a large portion of the success I have had in raising grass to the decomposition of vegetable matter in the soil, when inverted. Such land as is full of vegetable fibre will pay to plow often, to raise grass, letting the inverted sod remain, and which in its decomposition is, in my judgment, quite a manuring of itself.

Two or three days' labor in the fall, gathering leaves to put into the yards as absorbents, will materially increase the amount and value of the manure pile. Pine leaves, contrary to general belief, are more valuable than most hard wood varieties, being especially rich in nitrogen and phosphoric acid, and two men can secure a large amount in a day or two in autumn. On the large farms in Saxony, where farming is probably conducted more scientifically and systematically than in any other country in the world, they have a man termed a manure bailiff, whose duty it is to get together everything that will add to the value and amount of the manure pile,—and there, a very high estimate is placed upon the leaves of the pine.

A very incorrect idea is entertained by many, that frequent plowing of land and keeping everything from growing will enrich it by its resting, and its exposure to the atmosphere.

Further than this, it has been proved by experiments in Saxony that of two pieces, side by side, and alike, one manured and

plowed three years in succession, beside the other similarly manured and tilled, but nothing planted, being simply kept bare and plowed often, that the fourth year, both being planted without manure, the piece that had produced nothing the three previous years, gave no more the fourth year, than the piece that had each year given good crops. The plant-producing power in the manure, applied where not planted, passed simply unused into the atmosphere, or rather, as experiment showed, as much of it as on the piece beside it, went for the growth of the crops raised upon it. This statement has been further substantiated by several experiments made in New York, with the same results, especially where heavy clover was grown successively, beside land equally manured, but kept entirely bare.

Our low lands do not need plowing very often, for they can be top-dressed, while the grass is of the right kind and the roots vigorous, but I am convinced it is poor policy to let our hills run out, expecting them to grow rich by resting, for yearly the vegetable matter in the soil grows less, and when they are plowed, scarcely anything is plowed up to enrich the soil by its decomposition.

Many of the hills are underlaid with decomposing ledges, and if the plow runs a little deeper each time it is plowed, and the rotten stone brought up to the action of the atmosphere, it will, by its crumbling, aid in forming a deeper soil upon them. I think these knolls can be much improved by plowing every three or four years, and the inverted sod harrowed down to grass, with what manure you can spare — sowing clover thickly, whose roots run deeper than any plow and bring to the surface eventually the elements beneath. The next three years when plowed you will find the soil deeper, with more vegetable matter, and by this way, unsightly knolls in fields can be made to look green and healthful at little expense. I pursued this course upon one of my own fields, using clover seed, plaster and muck almost entirely to manure it, and could those hearing my voice see it now, and as it was twelve years ago, they would try the same.

Clover does not remain over two years at the most and the amount of roots grown upon an acre, simply to decay there, is surprisingly large. These roots possess over nine times as much manurial properties, when the stalk is cut, when beginning to flower, than when ripe, consequently to the superior value of the early cut grass must be added this enormous advantage to the soil. There is no surer way of killing out good grass roots of any

kind than cutting the grass late. The roots are exhausted in supplying the nutriment to ripen the seed and stalk, and they are so weakened that they are almost valueless or completely die out, while the soil is rendered poorer by the ripening of the seed.

There is no more economy in letting the soil get poor, than in going without your dinner to save fifty cents, because you will eat a dollar's worth for your supper or go hungry. When once the land is in good condition, keep it so, either by frequent plowing, if it has much vegetable matter, or if not, and low land, with top dressing.

Don't try to bring up run out soil, with poor grass roots, by top dressing, for it is cheaper to plow it and put in new seed. If you do top dress, do it within three years after seeded down, when the soil is a little open to admit it and the grass roots vigorous and of the right kind.

I could continue these remarks almost indefinitely, but have already said enough to awaken thought and I trust some discussion. It would be easy for me to go on and show the comparative value of each kind of manure but figures are tedious, though in this case the value would depend much, after all, on the food, age, condition and usage of the animal voiding it. I wish I could go further and tell you the exact manure for certain soils and crops, but I shall not attempt to do it further than I have in a general way, and I doubt my ability to do much more, as the condition of the soil and the elements are not uniform.

It would be easy for me to give a few statements in the matter, but I have already wearied your patience and prefer to leave this to others who may follow in this discussion, or to some professional or agricultural chemist, more capable than I can ever hope to be. I feel sure that more intelligence is needed among our agricultural brethren to enable them to labor intelligently and to apply properly the right manure and seed to the right kind of land.

While I did not believe entirely the statement of the breeder, that he could locate the white feather in the black cock's tail precisely where desired, still I do believe its author had more grounds for his assertion than is generally believed, and I believe intelligence will show almost equally surprising results if applied in the cultivation of our farms. In tobacco raising sections, intelligence has benefited farmers more than any other region I have ever visited. For the successful raising of tobacco there has

become almost a certainty where very uncertain before, and land which was selling for one hundred dollars per acre ten years ago, now sells for nearly three hundred, and its owners are growing rich in its cultivation.

Scientific men, knowing the constituents of the soil there, which is very uniform, and of the tobacco plant by analysis, have aided manufacturers in producing a fertilizer which supplies the requirements of the plant with those elements which are deficient in the soil. Now when I tell you that eight hundred dollars' worth of tobacco is no unusual crop for an acre, although somewhat above the average, you can easily calculate the immense benefit science has rendered the farmers of central Massachusetts.

Now, while it is a question whether much of our land is suited to the raising of tobacco, still there are crops especially adapted to each variety of our soil, and only carefully conducted and long continued experiments, or science will tell us which they are, and the sooner we learn it the better, for at the present price of labor it must be economical and we cannot afford to make mistakes.

With my little knowledge of the requirements of plants and making fertilizers, I feel perfectly sure that I can manufacture an article that will produce upon the same kind of land, heavy straw and little grain, or light, puny straw, with plump kernels, and also a manure combining qualities which will yield both heavy kernel and straw, and which will not fail one time in ten thousand, if, knowing the soil, the elements and condition are favorable.

I am looking forward to our Agricultural College with a feeling of certainty that it is to be of immense value to us in this regard, knowing that it will gather around it earnest and intelligent young men from all sections of our State, who will bring away and put in practice among us all, that knowledge so necessary and even absolutely essential to successful agriculture. And the farm connected with it can and must be made a means of immense benefit, for upon it must be tried those experiments, the results of which will be most important for them. These experiments can be conducted with such exactness that we must accept their results as an establishment of certain facts.

With the fact staring us in the face that we yearly expend one hundred and fifty thousand dollars for commercial fertilizers, and some of them scarcely worth their freight, it is time we should look somewhere for protection against imposition, and I feel that to this college we shall sooner or later all look for a decision in

regard to this matter that shall save us from being defrauded out of our money, for at the college laboratory there should be a yearly and early analysis of all fertilizers coming into our market for sale, and the results of this analysis given to the farmer, in plain English, early enough to warn him whose to shun and of whom to purchase. New seeds of all kinds failing there, need not be tried elsewhere, while those that have proved of value can be recommended for use, with a certainty of their success.

If we have an agricultural newspaper weekly circulating among the farmers of the State, is it too much to expect from an institution like this an article in its columns, giving us information which with our faculties we cannot ourselves acquire. And farther, is it too much to ask, that when we gather together upon occasions like this, we shall have with us some one connected with that institution, able to present in an attractive form ideas so necessary for our improvement and our practice.

I do not feel that this institution has been sufficiently encouraged, or its information appreciated. I know that it is in good and earnest hands, and I know that there is in training a class of earnest and intelligent young men, who will come forth from there with strong and willing hands, to put in practice all over the State the results of an education that will not only reflect credit upon that institution, but be of vast benefit to the farming interests of the old Commonwealth, that has been slow to cherish it, but which in later years will be proud to call it one of her noblest institutions.

REMARKS ON FERTILIZATION.

BY HON. WARREN BROWN, OF HAMPTON FALLS.

The supply of manure is one intimately connected with our agriculture. Most of the land in this State has been deprived of its fertility, and will no longer produce paying crops without plant food being artificially supplied. Barn-yard manure affords all the food needed by crops, made from well-fed animals and kept under cover; well composted and carefully applied, it comes the nearest to perfection as a fertilizer, of anything that has been discovered. The great trouble has been that the supply has been

inadequate on most farms to repair the waste. On many farms much of the value is allowed to escape from exposure to wind and rain. No provision is made to save the liquid portion, which is the most valuable. In many cases it is nearly all lost. No account is made of the droppings of poultry. They are either wasted entirely or are used in connection with such materials that its most valuable ingredients are set free and pass off with no benefit to the crop. The soapsuds and slops from the house are of great value, yet few do anything to save them.

Those who live near towns and villages can purchase manure to a limited extent. This is out of the question with the majority of the farmers of the State. They must work up a supply on their own premises. No one should be justified in buying manure who does not utilize all the materials within reach about his farm. The manure from all stock should be kept under cover. All animals should have a suitable bed. Besides promoting thrift and comfort, it will make a great addition to the manure heap. Pasture hay, straw, sawdust, and leaves, may be profitably used in this connection. I would not advise the use of pine leaves, as has been recommended, not but that they would make good manure, but we cannot afford to rob the woodlands of the annual deposit made by nature to restore the fertility. If removed we shall soon stop the growth, and find we have taken material belonging to one crop to serve another. This we can never afford to do.

In addition to the manure and bedding from animals, the sweepings of the barn, the scrapings of the yard in summer, weeds and grass from the garden, dooryard and roadsides, may be added, which should be done before the seeds mature, with good results. It makes the premises look much better, and yields good manure. Those who have a supply of muck can add from time to time such quantities as may seem proper. In the absence of muck, such earth as will make the best substitute may be used. Many use the rich soil about old walls; in using earth it is well to bear in mind where the manure is to be applied, and get different soil from that of the field. Carting dirt to the barn cellar, and after a time back to the same field is poor policy. The chemical action of one kind of soil on another is often very beneficial. By a little foresight in composting manure we may take advantage of this. Too much earth should not be used, only enough to act as an absorbent. Many err by using too much of

nearly worthless material. By saving everything which may be found on any farm, and working it judiciously into the manure heap, it will be found to increase very much in quantity. An interest will be awakened in the mind of the farmer. After trying it once, he will be likely to continue in the same practice.

With the aid of such stock as we kept the past summer we made seventy-five loads of excellent manure, with the addition of little not found on the farm. We kept our premises clean and free from weeds, working it up into a shape which made quite an increase to our available capital. All have not equal advantages in this respect, yet there is not that difference many imagine. All may do better than they are doing. Ashes are a good manure for almost all crops. The supply is limited. They should all be saved and carefully applied to the soil. Bone manures are used with the best success. When properly reduced, and can be obtained free from adulteration they can be used with an almost absolute certainty. Commercial manures in the shape of superphosphates, etc., have been used extensively within a few years. While some have given satisfaction and have been profitably used, the majority have not done so. The farmers have been outrageously swindled, in many instances receiving no equivalent for their money. Worthless material has been sold at \$50 per ton. In this the farmer is at great disadvantage, not being able to test the quality at the time of purchase. Finding its worthlessness in the failure of his crop, and that he has been deceived and cheated by some glib-tongued agent, who has taken his money and is safe from harm's way, ready to invent some plausible excuse which shall put the blame of failure upon the farmer. These things have gone far enough and demand a remedy. Farmers generally have not money enough to be willing to part with it without an equivalent.

While chemistry has done much to aid the farmer in his business, its application has not been reduced to a certainty. There is much in the use of chemical terms calculated to mislead, and care should be had how much confidence is placed in the statements of interested parties.

The manure crop is the most important one on the farms of New Hampshire. If this is abundant others cannot fail to follow. More attention should be paid to it if we would make our farming pay.

AGRICULTURAL SOCIETIES—THEIR OBJECTS AND MANAGEMENT.

BY HON. MOSES HUMPHREY, OF CONCORD.

Some of the views which I propose to present to you at this time may be by some thought not strictly agricultural, or to have little if any connection with our series of meetings or their objects. But I differ somewhat from such, for I believe our fairs, properly conducted, may be great agricultural educators.

The question has been suggested to me by observation and experience in agricultural fairs, and by the remarks of some of our best agriculturists who take a deep interest in their success, as a valuable institution to the farmer and mechanic, whether the trotting for purses at our fairs is a benefit or an injury, as they are generally conducted.

An article upon the subject of fairs states that the Highland society of Scotland, the oldest organization of the kind in Great Britain, was formed in 1780, and that the first steps towards such organization in this country were taken shortly after the close of the Revolution. The Philadelphia Society for the Improvement of Agriculture was organized in 1787, numbering among its members George Washington, Robert Morris, Timothy Pickering and other distinguished men. The Massachusetts Society for the Promotion of Agriculture was formed in 1792. The New York State Society for the Promotion of Agriculture, Arts and Manufactures, was organized in 1793, with Chancellor Livingston at its head. County societies, the Berkshire, Massachusetts, taking the lead, were formed in several States before the close of the last century; but it was not until after the war of 1812, that these societies became general.

Before the holding of fairs societies directed their efforts mainly to bringing out papers, or essays, in response to questions propounded; much valuable matter being thus elicited. Some socie-

ties offered premiums for the introduction of breeds of domestic animals, implements, seeds, etc., thought to be desirable; and, under this offer, as I understand it, Merino, Leicester and Texel sheep, and both Short-horn and Holstein cattle were introduced into Massachusetts. Premiums were also offered for experiments.

The fundamental idea of agricultural societies was to better the farming interest by introducing such improvements in husbandry as would secure the best returns for the outlay of labor and capital. They were to afford only such amusement to the people as would naturally be derived from the contemplation of objects of utility, and from fair competition in the really useful departments of labor and production. Such is, undoubtedly, the true idea of our agricultural societies.

The means by which these societies can affect the best results, may be enumerated as follows:

1. The holding of exhibitions, at which premiums are given for superior merit in the different departments to which their supervision is extended.

2. The bestowment of money to make experiments in settlement of doubtful questions.

3. The publication of essays containing useful information.

Our societies generally adopt the first, and make the holding of exhibitions their sole object. There may be some exceptions, but if so, I hardly know where they exist outside of the New Hampshire State Society, unless it be to some extent, the New England Society.

In holding our exhibitions we should endeavor, as far as possible, to make them successful and satisfactory to the contributors as well as to the public. They should also be made practical and useful. To accomplish this, we must select our best men for judges—those who will make their awards according to the merits of whatever may be exhibited. There is a complaint and perhaps, sometimes, there is cause for it about the selection of judges. I know it is a very difficult matter to select proper persons for that responsible place, and I have no doubt that the officers of our societies do the best they can in making their selections. They are liable to mistakes, and sometimes select incompetent persons; then again there will be a number of vacancies to be filled on the days of exhibition, in the usual way of nominations made promiscuously by the crowd, and some of them personally interested, which gives a just cause of complaint

by the exhibitors who stand upon the merits of their stock and other productions entirely, and not upon trickery or partiality in getting the premiums. From my experience and observation I am confident it would tend to remedy this evil, and do away with this complaint, if the officers of our societies should select two persons of undoubted integrity and well qualified to judge upon the animals or articles, in the class for which they are selected, in season before holding the fairs, to ascertain whether the persons selected will serve; if not let others be substituted. The persons so elected and serving as judges should have all their expenses paid, if nothing more, thus affording some inducement for them to act. In this way I believe we can have impartial judges and those who will give satisfaction.

The citizens of the State, as well as the community where our exhibitions are held, are indebted to the enterprising and self-sacrificing contributors in making the entries of stock and other productions, which are the essential elements of any successful fair. If any preference is to be shown to any person in invitations to dinners or other entertainments by the officers of our societies, it should be to contributors, rather than to the "distinguished guests," who oftentimes attend merely, or mainly, for the purpose of gaining notoriety, while the hard working farmers and mechanics who make the show get but little for their labor and trouble, even if they obtain the premiums. With the attention shown them that both courtesy and justice demand, the exhibitors would feel that they were properly appreciated, and would be likely to have more interest in successful exhibitions, by showing what can be done by careful breeding, good cultivation, fine mechanical skill and a cultivated taste in horticulture and the fine arts.

Unusual prominence has, of late years, been given to the horse under the name of trials of speed, and societies have made racing the principal feature of their exhibitions. The excitement incident to such displays is attractive to those who attend for amusement; but is there any real improvement by these "agricultural horse trots?" What improvement do they make—although some pretend they do—by such exhibitions on the track? It frequently happens that the winning horse is one of little value for any purpose; and the offering of premiums for mere speed if it has any influence at all tends to the production

of horses in which the less showy but more useful properties are found only in an inferior degree.

An acquaintance with the manner in which these trials of speed are gotten up (and I propose to speak more fully on that subject before I get through), leads me to the conclusion that they are chiefly designed as means for making money for horse dealers and gamblers; and that the contests are, in principle, nothing more than those instituted by gambling associations, where horses compete for purses.

In this connection I will give you what Henry Ward Beecher thinks of horse races, and their influence. He says that "the turf in England deteriorated the stock in such important respects that the light cavalry and dragoon service suffered severely, until dependence on turf stables was abandoned."

Touching the moral bearing of the question, he says:

"As crows to the cornfield, or vultures to their prey; as flies to summer sweet, so to the annual races flow the whole tribe of gamesters and pleasure lovers. It is the Jerusalem of wicked men, and thither the tribes go up like Israel of old, but for a different sacrifice. No form of social abomination is unknown or unpracticed; if all the good that is claimed, and hundred times more were done to horses, it would be a dear bargain. To ruin men for the sake of improving horses, to sacrifice conscience and purity for the sake of good bones and muscles in a beast; this is paying a little too much for good brutes. Indeed the shameless immorality, the perpetual and growing dishonesty, the almost immeasurable secret villany of gentlemen of the turf, has alarmed and disgusted many stalwart racers, who, having no objection to some evil, are appalled at the very ocean of depravity which rolls before them. I will drop this barbarous amusement with a few questions: What have you young men to do with the turf, admitting it to be what it claims—a school for horses? Are you particularly interested in that branch of learning? Is it safe to accustom yourselves to such tremendous excitement as that of racing? Is the invariable company of such places of a kind which you ought to be found in? Will races make you more moral, more industrious, more careful, economical, trustworthy? You who have attended them, what advice would you give a young man, a younger brother for instance, who should seriously ask if he had better attend?"

In view of these facts are such displays calculated to improve either the breed of horses or the morals of the community? The true friends of agriculture are oftentimes disgusted, and stand aloof, thus depriving our societies of the aid of the most substantial citizens—the class that can alone be depended upon for the prosecution of enterprises designed for the public good.

The horse should not be excluded from our fairs; he is one of

the most useful of our domestic animals, and his improvement should not be overlooked, but we contend that he should be presented in other relations, and with other motives, than those which have become prevalent.

Now how are our fairs managed in the State, or I might say, in New England? Are they held for the benefit of the agriculturalist, the mechanic and the artisan? Are they held for rational amusement and the dissemination of useful information? Are they held for any one of these objects or for all combined, or for the *fast horse*? It would appear from the posters, that the growing tendency is to give all the prominence to the fast horse. Large purses are offered in order to draw the track horses which are trained for the race course and are kept for gambling purposes, on the same principle that all gamblers have their implements, such as cards, dice, etc. It is not the object so much to win the race as it is to bet, and buy and sell pools, on the race. Opportunity is also given the gambling fraternity that attend the races to ply their vocation among the unwary and confiding. From offering these large purses, the premiums, of necessity, must be small on stock and articles in comparison with the sums that are expended upon these trots; though it is often the case that there is thoroughbred stock on the grounds, one animal of which will exceed in value two or three of the track horses, and is a public benefit, while a track horse is a curse to the community in which it is owned, and, as a general thing, to the owner. At the first thought some may think my statement incorrect; for I am aware we have in all our communities some of the best citizens who differ from me upon this subject; who see no harm in horse racing at our fairs; who seem to think that it should be the most prominent part of the exhibition, and to deem it an indispensable inducement to the people to secure their attendance upon the fair. They seem to think also that it is almost impossible to sustain a fair financially, without the race course.

It was quite a number of years before the State Agricultural Society would recognize a horse trot, or one that was trotted for money, as a part of their proceedings, for I do not find on their records any notice of horse trots, nor in the treasurer's reports any instances of money paid out for purses until 1858. It is, however, a well-known fact that for two or three years prior to that time horse trots were connected with the fairs. It was generally understood, however, that outside parties managed the

trots; the society, perhaps, doing something towards sustaining them. The officers at that time did not feel willing to acknowledge that the society had anything to do with paying for the purses; considering, as I understand it, that trotting for money did not come within the objects of the organization, and not thinking it good policy to encourage racing at our fairs.

But time passed on, and with a change of officers and perhaps a change of public sentiment, trotting gradually crept in and became one of the established features of the fair, until now it is, as has already been suggested, the leading one, whether it is at the New England or at our county fairs.

It was not until 1858 that the State society formally inaugurated the agricultural horse trots, it having then for the first time openly advertised purses to be paid for trotting. The races of that year were the first held at any of our fairs to my knowledge, and I think the first in New England. It was thought by many that great advantages would result from the introduction of races at our fairs. The idea was advanced that the farmers and breeders of horses would then have the opportunity to witness speed on the track, and that by this the breeding of fast horses would be encouraged. It was said that it cost no more to breed a fast colt than a medium one; then the fast horses would bring prices all the way from \$500 to \$1000, whereas a common horse would bring only from \$100 to \$300, hence there was a great advantage in raising the fast animals.

This reasoning has prevailed with many minds, and in order to obtain the fast colts the farmer or breeder has naturally sought for the service to their mares the fast trotting stock horses of high sounding names, in all parts of the country, paying fabulous prices for the service, varying all the way from twenty-five dollars to five hundred, with the expectation of getting a fast colt, that would become a "two-thirty" horse and bring a big price; none of your small priced nags, but one of the kind that goes into the thousands. This I think is a fair statement of the case.

Has not many a farmer or breeder done this, and in most cases been sadly disappointed, for the chances are adverse even if colts are from the best trotting stock. For we find in the history of the English horse that out of every thirty colts from thoroughbreds, but one proved fast. And then only the horse whose pedigree is eight generations in duration, without any base admixture, is considered a thoroughbred. Have we any such pure thorough-

bred stock here in New England? If we have, then our chance of securing fast trotting offspring would be one in thirty, if the experience of English breeders is worth anything. But I have my doubts about there being any thoroughbreds of that stamp in New England. My judgment is, on the average there is not one chance in fifty to get a trotter, in the acceptance of that term, among those who breed especially with the design of getting fast horses. Indeed it would perhaps be no more than the truth to say the chance of getting a fast horse—that is fast in the parlance of the track by breeding or training—is about the same as for lightning to strike twice precisely in the same place. Now is there in this any object to farmers or breeders of horses to encourage horse trotting at our fairs? I think not. For instead of there being here an encouragement to raise fast horses, the reverse is true, it has a demoralizing tendency. It has the effect to raise poor ones instead of good substantial work or family horses; for if you fail in getting a trotter you neither have one thing nor another. The animal is not fit for work or fancy, nor is it one that can command a large price.

Then trying to raise fast colts or horses gets the boys on the farm unsteady and uneasy, for it brings them in contact with the fast horse men, and they get false notions into their heads; they think if they can get into the village or city, they can live easier and enjoy themselves better, as it appears to them that all parties that have fast horses or are connected with the track, live easy. Hence they become disgusted with the old farm and honest country living, sigh for a fast horse and to join the dangerous fraternity of fast boys. Now this is a sad and mistaken notion, for there is no better place for comfort and for right and enlightened living, than on the farm, especially in these days of newspapers, and other widely disseminated means of information and mental culture.

We have known smart business men to become so infatuated with the fast horse mania, as to sacrifice their business and their property all for the track. Then the idea that it is desirable to encourage the raising of fast horses, on account of the great prices they may bring, is a mistaken one. To be sure you will hear of this man selling his trotter for a thousand dollars, and this one being offered for his five thousand, while still another sells his for six thousand, and so on—all those affected by the fast-horse fever, talking big prices and hoping for a big strike. Then you will find

the young boys of a dozen years or so about the track, cigars in their mouths, talking and swelling about this or that fast horse; they of course know all about the value of them and how fast they can go, and they are ready to bet on their favorite with any one that dares to dispute the correctness of their judgment.

But did you ever hear how much money it cost to fit a fast horse, by the trainer, for the track, and to bring him within the range of such extravagant prices? Or, did you ever hear how many hundreds of horses have failed to make fast ones, notwithstanding the large amount of money (probably three times as much in money as they would bring) that has been spent upon them in training.

I have no doubt, that in most cases the officers of the societies intend that the agricultural horse-trots shall be honorably conducted, and that there shall be no gambling connected with it, nor anything else that would have a demoralizing tendency. But is that the fact? I think not, for where they advertise their show-bills for their fairs, do you not find displayed in large figures the amount that will be paid in purses, as premiums for fast horses, coupled with invitation to all parties to enter for them by paying the entrance fee; no matter whether those parties are good, honest farmers, or breeders, who may think they have a fast horse (but they are sadly mistaken sometimes), as the sporting fraternity who make it their business to attend all the races, all alike are made welcome if they but conform to the rules of the track. What next? After a certain time named in the bills for the entries to close, the secretary or treasurer will advertise the horses that have entered for the purses, in the hope of making the fair more attractive to the public, and to induce a larger attendance.

Then follows the selling of the pools as soon as it is known for a certainty, what horses will start in the race; perhaps this will take place the evening before the race, but as a general thing the sale will be on the fair ground on the day of the race. All the gambling fraternity, together with those who have an itching to have a hand in the pools, will be there, young men and boys will also be present, to learn, perhaps, their first lesson in chances or gambling, for the whole thing is exciting to them, and they will feel a kindling desire to try their hand also. Now as the pools are sold at auction, often bringing large sums on the chance of some favorite horse or horses to win the race, the unpracticed observer supposes everything is fair; but in reality, as in the case

of every species of gambling, there is almost always more or less trickery.

The shrewd ones that have large amounts at stake on such and such a horse or horses, will lay or sell the race with the owner or driver, if it is possible and for their interest to do so. Sometimes to save themselves and make a good thing of it, they will buy up the probably-winning horse, that is if they have bought pools heavily on one that they have since found out is likely to be beaten. Then they will draw him out of the race, leaving their favorite to win. Again, you will find entered in the race another horse that has a reputation of being very fast; the pools sell high on him, and the side bets are large, you will discover that those who are inside the ring with the owners understand the matter, and buy pools in another direction, so that it is their interest to have him beaten. The owner goes to his driver and says, "If you can beat with John, I do not want it; pull him back, let such a horse get the race if he can." The driver does as he is bidden.

Then there are others that have an interest in the pools, and who know the weakness of some of the drivers in the race, that would be likely to beat their favorite, and taking advantage of his fondness for liquor, will get him excited, so that he will drive unsteadily, and lose the race.

Again, the officers of societies, after having received the entries and made special arrangements for some of the celebrated horses to trot for their purses, after having definitely announced the same by papers and posters, may after all be disappointed, for but little dependence can be put upon fast horses or those that control them, as a general thing. It is oftentimes the case that owners or managers of fast horses will come upon the grounds, and find some horse entered for the purse, and to be one in the race they have entered and that the chances are they will be beaten, they will withdraw their horse, if it breaks up the race or does what amounts to that. Every observant spectator knows in such a case, the horses that do start in the race are no match; they only go to get the money, or there may have been a bargain between the parties to withdraw his horse; whereas, if the horse that was withdrawn had started in the race, it would have made an interesting trial of speed to those honestly desirous of having a fair trot.

Again, it will happen that the largest purse offered to be trotted for, and the one expected by the crowd to be the most interesting,

will often prove an entire failure, from false sensitiveness of a driver or owner about his rights. Sometimes he will not start because such and such a horse is going to start in the race with him, or he does not like the ruling of the judges about his position, or something else, so he withdraws his horse from the race, and breaks up the trot, to the great disappointment of sportsmen and lovers of the track.

I have known a case where a trot prominently marked on the programme, was earnestly looked for to come off between two celebrated horses, and when the owners privately agreed to divide the money for which they were to trot. They started and made one heat, after a fashion, then drew out one horse under the plea of sickness, the other going the heats alone and taking the money, to the great disgust and disappointment of the people.

It always seems to those really interested in having the fairs pass off satisfactorily, that those who appear to compete for the purses do not feel under any obligation to the officers of the society to assist them in their endeavors to please the people. As it is pretty generally understood by those that are familiar with the race course that it is full of tricks and underhanded management, you do not know whether you will get a good, honest trot or not; indeed if you do it will almost be a miracle. Sometimes an honest man owns a fast horse, and knows about what he can do on the course; he enters him for the purse, and having an honest driver he can depend upon, you may probably see some honest trotting. Why? Because the other parties that are in the race cannot buy him up or off for he goes in to win, and they have to do their best and put their horses to their utmost speed to beat him if they can.

Many find fault with the managers of fairs, and think they are to blame for such operations on the track, and believe they meant to deceive the people by their posters announcing the races, etc., when there is no blame whatever to be attached to them. For all of us who have had any experience in this matter know that the management of this department is one of the most difficult parts of the fair to manage, for you have to depend entirely upon the co-operation of the trackmen in carrying out the programmes of races; and such dependence is sometimes vain. The race-course operates against our exhibitions in other ways. Its tendency is to draw the people to them from a wrong motive, a mere idle curiosity to see the races, not the desire of promoting

the important object for which agricultural fairs were intended. Now, I believe that mode in which our fairs have been conducted of late years in giving such prominence to horse racing, has had a tendency to demoralize public sentiment in this respect, so far as the original objects of fairs are concerned, so much so it has discouraged our best farmers—those who raise the best stock and cultivate the soil profitably—from contributing to or even attending the fairs as it was formerly their custom to do.

Then again, as some of our societies make racing the principal feature of their exhibitions, the expenses of operating them are largely enhanced. When they advertise the giving of large purses to induce fast-horsemen to compete, they must be at a great expense in fitting up a track as faultless as possible, or there is no end of dissatisfaction and fault-finding. The best of stables must also be fitted up for their horses; occupying as much stable room as it would take to accommodate three stock or family horses.

There is also another item of expense in connection with the trotting, especially at large fairs, that is not generally known. It is this: The judges of the races are paid for their professional services in that capacity, while no other judges in any of the departments, no matter how important, receive any compensation or even have their expenses paid.

Another objection to the racing in connection with our fairs, in addition to the many that I have named, is that it engrosses the attention of visitors from giving that careful examination of the stock, and other objects on exhibition, to which they are entitled, and which is due to the meritorious exhibitors who at considerable expense make their contribution to the entries. Were it not for the races such contributions would have the undivided attention of the people in attendance, which would be a great encouragement, also an inducement for farmers and others to show their productions. They would feel well paid for their efforts if they did not get a premium. But as matters are now managed, about the time the people get together and commence their examination of what may be exhibited upon the grounds, and the judges are fairly at work, it is announced that a great trot is coming off, they see the horses collecting on the track; then there is a rush for the track; the exhibition halls are left vacant and the cattle and sheep pens are deserted (with a few exceptions). Many doubtless thus hurry away to the race-course

with the intention of returning soon to finish their examination; but they are disappointed, the horses do not get started as they expected, for they do not understand the tricks of the track. A long time is spent in scoring, each party trying to get the advantage of the other, while time flies. Finally, the word "go" is given; then the spectators become interested and before they realize it the afternoon is spent and they start for home without revisiting, or really seeing the most valuable departments of the exhibition, oftentimes some of the judges taking their entry book with them, forgetting in the excitement of the occasion to leave it, causing trouble to the officers of the society. So in this view of the case it works badly and discourages people from bringing again their production for exhibition, or trying to help make a good show.

Again, there is a liability to accidents on the track, not only to the visitors but to the drivers and their horses, when, in the excitement of the race, the driving becomes reckless and collisions occur injuring persons and beasts, perhaps spoiling a valuable stock horse which is a great loss to the community. This has happened and may occur again.

The horse should not be excluded from our exhibitions, for he is one of the most useful of our domestic animals. His improvement should not be overlooked. Several classes of horses are required, but the most important of these are the work and family horse; these most need improvement. Next in importance is the roadster; one point of merit in this class is, of course, speed, but the fairest mode of testing this quality would be to try each horse by itself in a quiet way, for when put in competition upon the track the race is not always to the swift, the tricks of the jockies often having more to do with the result than the speed of the horses. But the common practice at our fairs for some years past has been to keep the best horses that are on exhibition — those that are of real merit, but not track horses — too much excluded from a general examination by the visitors who have much interest in good stock or other valuable horses. Such animals are too often kept locked up in their stables, instead of being brought out upon the grounds where all could see them. It is thus almost impossible for parties to see them, to say nothing of having a chance to examine them. Only a particular favorite or a friend of the owners will have that privilege. A part of the grounds should be set apart for the exhibition of this

class of horses, and they should be shown at least two or three hours each day; announcement to this effect should be made in the programme. It is generally supposed that all which compete for premiums and purses are paid alike, that is, *pro rata*, providing the receipts are not enough to meet the bills. But it is not so. If there is a deficiency the owners of fast horses receive their purses in full, but the other exhibitors must take what they can get. A case of that kind occurred at one of the fairs of the New England Agricultural Society, in which the purses were paid in full, while all the other premiums were paid about fifty cents on the dollar.

It is said and fully believed by many that our fairs cannot be sustained financially without the races, as they are the great attraction to draw the people to the fair. Now is this the fact? I have my doubt about it, considering all the expenses that are connected with the race. In the first place, you have to pay large purses; then there is the expense of fitting up the track, and of the extra stable accommodation. Then your judges of the races at the large fairs are paid liberal amounts for their services. Again, you are required to have a large corps of mounted marshals, whose expenses should, in justice, be paid if nothing more; and, at some of our large fairs, they receive liberal payment, amounting to a considerable sum. Then, in connection with the race, you are obliged to have a band of music at a great expense. These you would not want if there was no racing at our shows. Besides all these there are other expenses that will creep in about the race course. But it is said that as an offset to these expenses the entrance money for the races goes far toward paying the expense; while the income from the grand stand which you would not get without the race is quite large. This may be true in some cases, but as a general rule it is not so, for it often happens that at our fairs very little money is obtained from entrance fees. As to the receipts from the grand stand, I think we could have other amusements than those of the race that would not demoralize the people, and would attract them quite as much to the grand stand so that about as much income would be derived from that source as at present. Hence when you reckon all the extra expense incident to the agricultural trot, it is very doubtful whether there is so much net gain to the funds of a society, from horse-racing as there is generally supposed by that attraction.

But, supposing receipts at fairs should fall off from not having

the races, I believe the deficiency might be largely made up by dispensing with complimentary tickets, many of which are issued by some societies. Let every person that passes the gate pay for his entrance to the grounds; with the exception perhaps of officers of other societies, or their delegates, properly vouched for. The New York State Agricultural Society gives no complimentary tickets; all pay except their life members, and delegates from other societies. The former have a special badge, which admits them. I think that this accounts, to some extent, for the large amount of money taken at the exhibitions of that society.

It is said that people will not attend purely utilitarian exhibitions, but experience shows that this objection is not valid.

The New York State Agricultural Society has, from the beginning, steadily refused to tolerate any gambling or clap-trap expedients. It has never allowed trials of speed on its grounds, and has never set apart any more ground for horses than was required fairly to show their gait; yet large crowds have always attended the exhibitions. It was so at their exhibition in October, 1871, which I visited. There were immense crowds in attendance on Wednesday and Thursday, the two middle days of the fair; the other days that preceded, and the closing one, were very rainy, and there were but a few visitors; but on the two fair days they took at the ticket offices about twenty-eight thousand dollars. The total receipts of the fair were about thirty thousand dollars. This was accomplished without the horse race or any other attraction than the purely agricultural and mechanical exhibition. I saw all classes represented there; and all seemed to be interested in the various departments, examining everything closely. It appeared to me to be the most perfect and practically useful exhibition that I have ever attended.

In Great Britain everything that has not a direct bearing on improvement in agriculture is rigidly excluded from the exhibition, yet the people attend in as great numbers, in proportion to population, as they do in this country.

Our Canada neighbors have no trials of speed at their exhibitions, and allow no private shows on their grounds (as I have been informed); but their fairs are as well attended as ours. It is unreasonable to suppose that our people are in nature so different from those of other states and countries that they cannot be influenced by similar motives.

The Cheshire County Society, which owns fair grounds at

Keene, were at an expense of about \$1200 in repairing their fences and buildings, etc., in 1871. They decided, in order to pay their debt, to offer large purses for races, that the people might be induced to attend, and thus enough might be realized from the fair to get them out of debt. But the result of the experiment proved disastrous and made the debt \$400 larger. In the fall of 1872 they determined to dispense with the races, and the result was they made \$400 instead of losing it as they had done the year before.

The meager display of animals and articles at some of our fairs is attributable largely to the fact that the public interest is absorbed by the racing encouraged on these occasions; and it is thought by many that unless this practice is checked, or stopped altogether, it will ruin our societies.

It is apparent that the fast horse business is operating injuriously to their interest, and seriously impairing their usefulness. The excitement incident to these displays is attractive to those who attend for mere amusement, but is there any real improvement effected by it? Should the friends of agriculture permit them at their exhibitions? I think not. If there is a necessity for races, or if the people seem to demand them, let them be held entirely separate from our fairs, for I do not believe they promote at all the objects of agricultural organizations. But if the community are for sustaining horse races as a special amusement, let them be held, but not in connection with our agricultural societies.

Perhaps I ought to have asked your indulgence before this for declaiming thus upon the evils and mischiefs of horse-racing at our fairs. But I felt that we all have an interest in this matter, whether we attend fairs or not, and that those who do attend should have some idea of what horse-trotting at our fairs really is and thus be the better able to decide whether it is calculated to promote the agricultural interests of the State or the country. While an agricultural society, conducted as it should be, is productive of manifest good, experience has proved that societies under the name and guise of agriculture, may by mismanagement and by its officers mistaking or forgetting the objects for which they are organized, become rather evils than blessings to the community.

The utility of exhibitions depends very much upon the systematic transaction of the business. Oftentimes persons without

any experience but very self-confident, undertake their management, but the result usually is general confusion and dissatisfaction. It requires a large experience to manage our fairs successfully, and to the satisfaction of exhibitors as well as visitors. There is generally too much hurry and confusion, which might be avoided, in a great measure, by requiring all entries to be made in advance, especially at all our large fairs, and having them catalogued and printed. The offering of premiums for settlement of doubtful questions, may under proper direction accomplish much good.

Accurate experiments are always valuable to the cause of agriculture, but in most cases are a loss to their conductors, hence the propriety of encouraging experiments by premiums. Every zealous and progressive farmer is more or less an experimenter, but the result of his experiments are seldom known to others. To prove that a doubtful practice is wrong, is as valuable as to prove it right; but the proof may be obtained by many farmers, and still the result be unknown to all but the experimenter.

Premiums for experiments, conducted with care and accuracy until the doubtful point is fairly settled that they are contending for, could not fail greatly to promote the improvement of agriculture.

The reports of these experiments would comprise valuable matter and in connection with special papers and essays, would be useful for publication by the societies. If officers of societies would give their serious attention to the subject, instead of giving so much of their valuable time to the horse race, they might greatly increase the usefulness of their associations, besides adding largely to the fund of useful information.

PLOWING.

BY JOSEPH B. WALKER, OF CONCORD.

And I wad tak to the stilts again, and turn sic furs on the bonny rigs o' Milnwood holms, that it wad be worth a pint but to look at them. — *Caddie Headrigg*.

The geologist tells us that the planet which we inhabit is a mass of fiery molten matter, molded into spherical shape by its diurnal motion, and enveloped in a crust of rock some fifty miles in thickness, whose external surface has, in the course of ages, under the action of air, frost, and water, been reduced to the softer covering which hides it, and which we call soil.

A close inspection of a handful of this soil, aided by a common microscope, at once demonstrates the truth of the geologist's assertion, and proves it nothing more or less than comminuted rock, pervaded, very likely, if taken from near the surface, with the remains of the vegetation that has grown and perished upon it. These mineral particles, although exceedingly minute, are all distinct in their individualities, and lie not in entire contact, one with another, but in confused juxtaposition, with open spaces between them, like a pile of bricks or cobble stones, carelessly heaped together.

Nor are these particles, fine as they are, solid, but full rather of minute chambers, open like the intervening spaces just mentioned, for the admission of air, moisture, and heat.

Now upon a surface stratum of this soil, some dozen inches or less in thickness, stand and grow the great mass of plants which furnish food for man and beast. Smite it with barrenness, and in a brief period all the animal life upon the earth would become extinct. Cheer it with culture and other enlivening influences to

which it readily responds, and a teeming vegetation will robe it in verdure and adorn it with flowers.

We are in little danger, therefore, of exaggerating the importance of any agency that will increase its productiveness. Among many, long in use, the oldest is that of the plow, and to this I beg leave to direct your attention during the half hour placed at my disposal.

I.

SOME OF THE EFFECTS OF PLOWING.

Plowing, my friends, is an operation with which we are all familiar, but yet *why* do we plow? To mellow the soil, say you? True, but what good does that do? Promotes the growth of crops, do you reply? True, again, but how?

The effects of plowing are many and various.

1. It loosens and pulverizes the ground, previously hard and compact, rendering it light, and opening innumerable minute passages through all parts of it, from its surface to the bottom of the furrows.

2. Through the soil, thus rendered friable, may freely push themselves the myriad roots and rootlets of growing plants, as, under the guidance of an instinct as wonderful as it is subtle, they extend themselves in all directions, in search of food; travelling as unerringly to their best feeding-places, as do your flocks and herds to the most verdant spots in your pastures.

3. Through these minute avenues, closed but for the plow's action, enter into the body of the soil, the three great indispensables of flourishing plant growth, viz: air, moisture, and heat.

The two first of these, freighted with carbonic acid and oxygen, immediately upon entering, set at work to break down the otherwise insoluble silicates which hold locked up and inaccessible great masses of sustenance upon which growing plants depend for their increase and support. But for their disintegrating and softening action upon the substance of the soil, vegetation must as surely starve, as would a toothless child confined in the flinty abundance of its father's granary. But, as the carbonic acid unites with the lime and alkalis present in the ground, and the oxygen with the iron, the hard particles composing the soil, apparently as indestructible as adamant, are gradually

converted to viands as delicious to the taste of plants, as was the fabled ambrosia of mythology to the palates of the gods. Indeed, the old system of restoring worn lands, to fertility by fallowing, was simply leaving them for a season, to the action of these and kindred elements.

And, through these same passages, is also admitted the solar heat, without whose presence no seed can germinate and no plant can grow.

4. Through these enter also the rains, rich in fertilizing matters, to be deposited in the soil as they percolate through it in search of the channels which are to bear them home to the ocean, from whose heaving bosom they have started on their beneficent circuits. Plowing, therefore, often performs the office of drainage, removing from compact soils the water whose prolonged presence would prove incompatible with a flourishing vegetation.

5. The plow is the best instrument with which to bury beneath the surface of our fields the manure we spread upon them for their enrichment and the weeds, which, though a nuisance above ground, when properly covered, soon rot and add to their fertility.

6. We plow, also, to invert the soil, thereby burying in the furrows the worn stratum at the surface, and replacing it with a fresh one from below; so that, during the intervals of plowing, there have been alternate periods of rest and recuperation, similar in some degree to the fallowing to which previous allusion has been made. If at the time of invasion the field be in turf, the grass roots turned under, by their gradual decomposition, enrich what then becomes the bottom soil, as well and perhaps better than it can be done in any other way; so that when, in turn, this comes again to the surface, it presents itself in part restored and richer than when buried. In short, repeated plowings are repeated transfers of the more or less exhausted top layers of soil to the bottoms of the furrows, and of the partially recuperated bottom strata to the surface.

7. We sometimes plow to intermix soils of different qualities, lying in juxtaposition but separate and distinct from one another. If, at any time we can, in this way, mix porous and barren sand with compact and retentive clay, we greatly improve the physical texture of the soil, and render land, before almost worthless, of high value; so that where, as in some of our drained low grounds, a thin stratum of muck is underlaid by sand, the simple mixing

by the plow of the two produces a soil that will remain productive without manure for generations. The forking over and loading and drawing and spreading of manure is a laborious business, the most so, perhaps, of any upon the farm. Whenever, therefore, we can make the plow supersede the dung cart, we had better improve the opportunity and save thereby many a hard-earned dollar and many a back-ache.

Such, my friends, are some of the reasons which induce us to plow our fields:—to open through their soils passages for the admission of air, warmth and moisture; to loosen them, in order that plant roots may extend themselves without obstruction; to admit through them the free passage of the rains that fall upon them; to bury beneath their surface the manures we spread upon them and the weeds; to bring, by inversion, into alternate use their upper and lower strata, and to intermix the different constituents of which they are composed. Others still there are but we have not time to consider them here.

II.

CONSTRUCTION OF THE PLOW.

Now what kind of a plow do we need to effect these purposes most successfully and economically?

1. We want one adapted to the work it is called upon to perform. We can break up our meadows with a seed plow, and we can bury the manure we spread upon them with a sod plough, but it would be as uneconomical as foolish thus to do. And yet, how few of us are careful to use only the plow best adapted to the work we have at hand! We sin, however, less in this particular than the generations that have preceded us. It is wonderful to see with what implements these have wrought. We can trace mention of the plow down through all the centuries, from the time when, eighteen hundred years before the Christian era, "Job's oxen were plowing and the Sabeans fell upon them and took them away." We find Elisha "plowing with twelve yoke of oxen, and he with the twelfth," and Cincinnatus leaving his plow in the field for the dictatorship of Rome, and our own gallant Putnam, stopping his team in mid furrow, that he may seize his sword and hasten to Bunker Hill, at the reveille of our Revolutionary war.

But what plows were those with which these great worthies pulverized their soils?

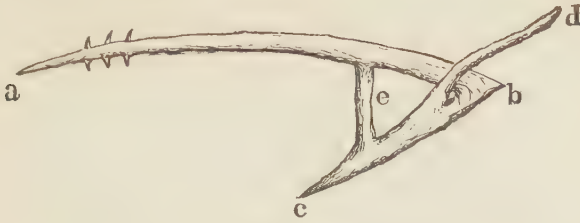


FIG. 1. Ancient Plow of Asia Minor.

At first, the plow was a forked stick, one prong, cut short, answering for the share, and the other for the beam, which was attached to the yoke by a short pin in front, and guided by a straight standard behind.



FIG. 2. Ancient Egyptian Plow.

As time passed on, and experience ripened, a rude mould board was added, and by and by a colter and at length a wheel.

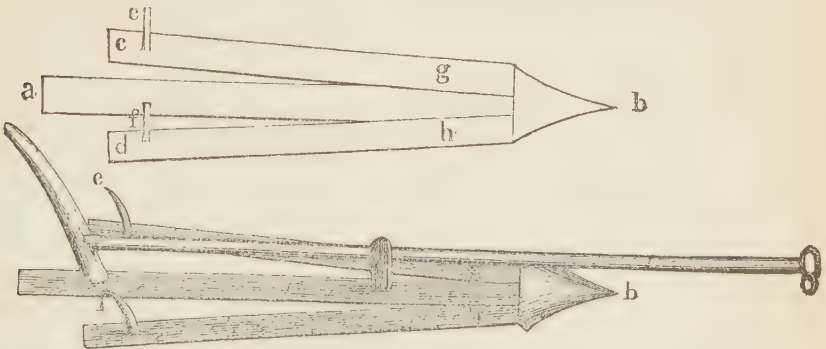


FIG. 3. Ancient form of Roman Plow.

The drawings and descriptions that have come down to us from antiquity show conclusively that the early plowman sought merely to root up the ground, and attempted nothing like a well turned furrow. Indeed, it was not until a time comparatively recent, that the plow approximated the shape it now bears, or produced work akin to what we are accustomed to see.

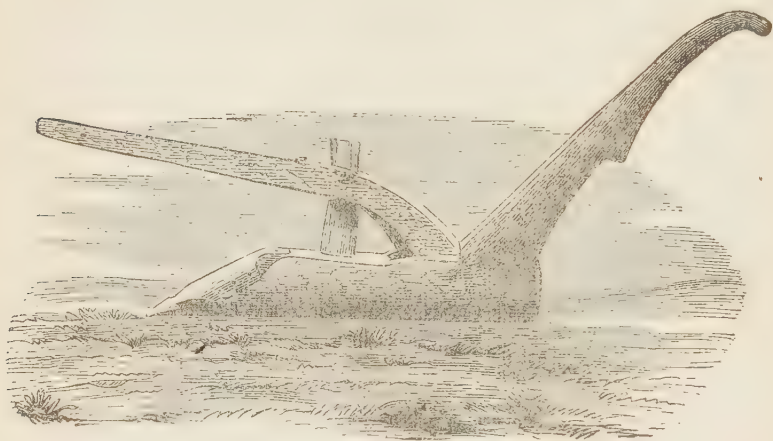


FIG. 4. Mexican Plow.

With the exception of the share, sole and colter, it was constructed of wood, and an absurd prejudice was for a long time more or less common among English farmers that an iron mould board poisoned the soil. Indeed, the first cast iron plow made in this country, by Charles Newbold, of New Jersey, dates only from 1797. This was cast in a single piece, and nearly a quarter of a century elapsed before Jethro Wood, in 1819, made the next important advance, by making iron plows in sections, fastened together as is now common.

And, until the opening of the present century, it was constructed upon no settled principles by persons whose skill was entirely empirical; who sometimes succeeded and sometimes failed in producing successful implements, and whose art, such as it was, being as ephemeral as themselves, died with them.

But near the close of the last century our distinguished countrymen, Thomas Jefferson, in a communication to the French Institute, announced to the world a principle by which mould boards exactly alike, could be made, in any number, and by per-

sons unknown to each other, viz: by the combination, in a curve, of the adjoining faces of two wedges, one to act vertically and lift the furrow slice, and the other laterally and turn it.

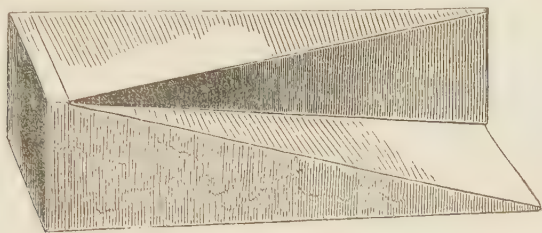


FIG. 5. Illustrating Jefferson's original idea of the Plow.

This was the first entrance upon solid ground in the career of plow-making, and from this commencement has been gradually developed the settled rules now allowed in the business.

Four distinct and very important offices attach to the plow, viz: to cut, raise, turn and pulverize the soil. The excellence of any particular plow is measured by the ease and perfection with which it accomplishes these four things.

The cutting edges therefore should be made of such material as to insure their being easily kept sharp, that they may sever the furrow slice with the least possible resistance, while the feather should be of such a length as to cut so much only of this from its bed as may be necessary, a shoulder being always left uncut, on which it may turn without slipping from its position. These edges should also be adjusted as to work in precisely the right lines, and allow the plow to be held vertically, otherwise it will veer from its true course, or be kept upon it only by an increase of its draft. For instance, if the edge of the colter inclines to the left, even in a slight degree, the tendency of the plow will be to run too much to land, and the narrow slice can only be kept of proper width by tilting the plow in the same direction and crowding its left side against the land, which will enhance seriously the friction of its motion and increase its draft.

This tipping of a plow one way or another, particularly in deep furrows, not only makes hard work for the plowman, but increases unmercifully the burden of his team; and yet, it is a practice which is very common and to which we are wont to give but little thought. We complain frequently, on our own account,

that a plow is a hard one to hold, but seldom think of the effects of our tiltings of it upon our teams.

Carefully conducted experiments, made by an able committee of the New York Agricultural Society, in 1867, demonstrated that of the whole draft of an ordinary plow, fifteen per cent. was expended in overcoming the friction of the soil upon the furrow's bottom; five and eight-tenths per cent. was absorbed in the mould board; thirty-five and a half per cent. in the land side and forty-two and two-tenths per cent. in the share and colter. Now, any boy who has turned the grind stone, before breakfast, for his father to grind his scythe in haying time, very well understands the effect of the old man's heaving on hard in order to get done quick, and remembers how willingly he would have exchanged places with him. Just so in plowing, the increased friction caused by canting the plow first one way and then the other, to make good work, enhances greatly, at times, even to the doubling of the burden of the team.

The share and mould board of a plow should be so constructed as to raise and turn the furrow slice with the least possible friction, and, consequently, with the least possible expenditure of motive power. If the angles at which these incline to the sole and land side be too great, or in other words, if the plow is too blunt, it will drag hard through the soil, which, instead of sliding over it easily, will pass it with difficulty, or perhaps even be pushed before it.

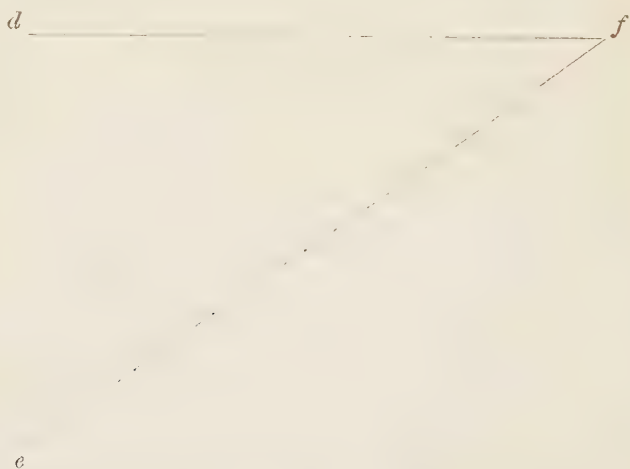


FIG. *e*. Illustrating too great angle of Mould Board to land side of Plow.

If, on the other hand, these angles be too acute, such an increased length of mould board will be requisite to turn the furrow slice, as will produce unnecessary friction by its too elongated surface.

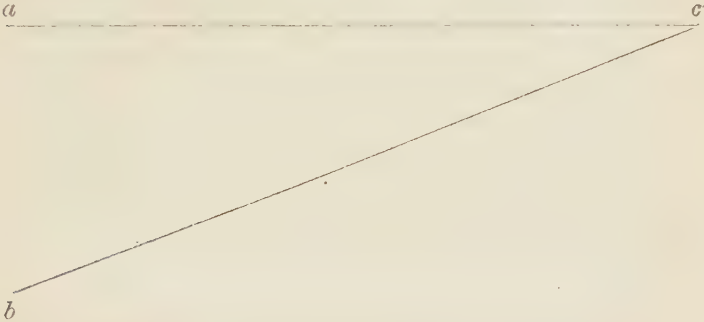


FIG. 7. Illustrating too acute angle of Mould Board to land side and consequently necessary elongation of former.

The share and mould board should be adjusted, therefore, at just such angles to the plow sole and land side, as will secure the plow's motion through the soil with the least friction consistent with good work by the plow. The construction of a share and mould board upon the principle of blending in one surface the adjoining faces of two wedges, one acting vertically and the other horizontally, will give a mould board of concave surface, and plows are now sometimes made whose shares and mould boards were modeled upon the frustrum of a cone. A plow thus constructed will turn handsome furrow slices but will not produce that degree of pulverization of the soil which is most desirable. This, however, may and should be secured, by making some portions of the mould board's general concavity slightly convex, so that, without any material increase of its friction, it will break the furrow slice by twisting it, and by causing different parts of this to slide over it with unequal velocities. This twist is all important in a mould board, for although we may twist a strap of leather or a hempen cord without fracturing it, it will be found otherwise with a furrow slice.

2. A plow should be so made as to run naturally in a vertical position and mostly take care of itself, so as to require but little holding. In breaking up, a day's work at the handles of such a plow is agreeable pastime, while with another, requiring a constant strain upon one arm or the other to secure an even furrow slice,

aided frequently by a push of the right foot or knee, to complete its turning, is exhausting and vexatious labor; and if, now and then, a rod or two of this, which you supposed inverted, falls back again to its former position so that you are compelled to stop your team and replace it by hand, your serene spirit will very likely be ruffled and yourself left to use some expressions you ought not to utter, and to wish the plow maker in a place where it were very sad to think he had gone.

3. Canting a plow, either way, not only increases its draft but causes it to make imperfect work. The bottoms of the furrows, instead of being left level and in one continuous plane, will be tilted and present a series of parallel ridges, which will be found upon examination to have not been stirred at all.

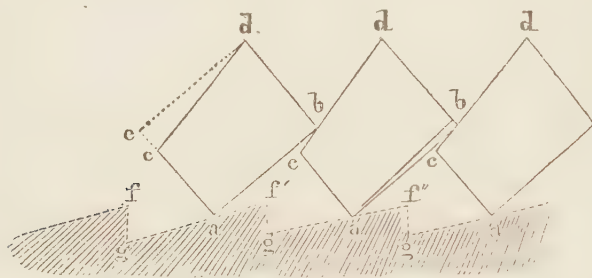


FIG. 8. Showing uneven surface of subsoil where plow has been tilted to the left.

4. A plow should be of such a shape as not only to secure ease of draft, evenness of wear and thoroughness of work, but should be made in the most thorough manner and of the best materials. Its wood work should be of oak, perfectly seasoned, and bolted to castings of sufficient and rightly distributed strength, that it may be both light and strong. The lighter a plow the better, provided its durability be not sacrificed, for, as we have before remarked, no less than fifteen per cent. of the whole power expended in moving it is required to overcome the friction of the sole upon the ground.

5. The outer surfaces of the land side, mould board and share should be thoroughly smoothed and the cutting edges be made hard, that they may be kept sharp. I saw a plow, of good reputation, fail entirely at a trial of plows at the New Hampshire Agricultural College farm, two years ago, simply on account of the roughness of its land side and mould board. These would be

better if made of steel, but iron answers a good purpose if kept bright and smooth. The manufacturers of the Collins steel plow claim that its draft is twenty per cent. less than that of other plows of similar size, in consequence of the very high polish of its hardened surfaces.

In short, the best modeled, most thoroughly made, lightest and easiest running plow is the most economical one to buy and use, for it secures the best pulverization at the least expense of implement and at the least expenditure of strength by plowman and team.

A moment's consideration will give us some idea of the value of the latter quality — lightness of draft. It has been estimated by Prof. J. Stanton Gould, who has written the ablest treatise on plowing we have ever met in print, that it costs the farmers of the United States twenty millions of dollars a year to do their plowing. The same gentleman states that, from actual experiments, witnessed and conducted in great part by himself, the plows in common use in this country differ in draft no less than forty-two per cent. and that the universal adoption of the light draft plows would reduce the annual expense of our national plowing eight millions and four hundred thousand dollars and add that much to the sum of our yearly farm profits.

III.

WHEN AND HOW TO PLOW.

1. Now a few words as to when and how to plow. The fall is doubtless the best time to do our breaking up. The weather is then cool, and we are usually less hurried than in spring. The inverted furrows are subjected to the disintegrating influences of the winter frost, and if done late, the grub worms in the soil will, many of them, be destroyed by the cold. By breaking up our sod ground in the fall, we forward somewhat the work of spring, which with us is a brief season and frequently a warm one.

For other plowing no definite times can be assigned and we must be governed by the exigencies of the particular occasion. But we should never plow land when it is decidedly wet, as it soon settles back into its former condition, and we expend our labor for naught. Neither, if we can avoid doing so, should we plow when it is very dry, as the plow runs hard, and the operation is more than ordinarily expensive.

2. By all means arrange to have team enough to draw your plow easily and comfortably. It is distressing to see a team

urged beyond its strength, moving at a snail's pace and kept in motion only by the punching of the goad or the swing of the whip. Cattle walk easiest at their natural gait, and when so loaded as to diminish this, there follows a greater loss in time than saving in motive power.

How often an extra yoke of oxen added to a breaking-up team, has increased the work accomplished, from an acre and one-half to two acres a day, a gain of thirty-three and one-third per cent. with an increase in expense, very likely, of less than fifteen per cent.*

3. A team should be attached to a plow in such a way as to let the latter "swim fair" in the furrow and thus secure the highest draft. We frequently hitch the front end of the chain attached to the plow too high, and the cattle draw to a disadvantage. Experience has shown that the most desirable elevation of a chain is at an angle of about twenty degrees with the plane of the furrow's bottom. If the rear cattle are large, as they ought to be, this elevation can be secured only by the use of a drop-link, which should always be used when required.

But we frequently find that the objectionable work of a plow is due, not to the plow, but to the insufficient length of the yoke, worn by the rear oxen, and will disappear altogether upon the substitution of another a few inches longer.

4. It is a matter of great consequence that the cutting edges of a plow be always kept sharp, as it is far easier and consequently cheaper, to cut than it is to tear the furrow slice from its bed, to say nothing of the imperfect work caused by the doubling of roots across the colter's edge or the share's point or feather, the increase of draft caused thereby, is as serious as it is needless. As we have before stated, no less than fifty-two and two-tenths per cent. of the whole draft power is absorbed in the share and colter. With this fact in mind, any one who has cut turf with a dull shovel and also with a sharp one, will readily appreciate the unnecessary burden thrown upon a team by a dull share and a colter clogged half the time with roots.

*This statement is based upon my own experience in breaking-up soil land, which is as follows:—

Three men and six oxen plow in one day one and one-half acres at cost of . . .	\$15 75
Three men and eight oxen plow in one day two acres at cost of . . .	17 75
	\$2 00

While the increased expense of team was \$2.00 or 12.69 per cent., the increase of area plowed, was one-half acre, or 33 1-3 per cent.

5. I think we lose no time in considering maturely the best manner of striking out the lands we are to plow; and the method of procedure should be fixed for all of them before the plow point pierces the surface of the first. Much loss of time and bad plowing often come from a neglect of this, as many of our fields are odd-shaped and far from level. A square or parallelogram is the simplest and most economical shape, for we can plow it with few or no dead furrows, and with little loss of travel.

A piece of land forty rods long and twenty-four rods wide contains just six acres. Supposing it level, how would you strike it out for plowing? I would not begin by plowing a furrow for its whole length up one side and down on the other, dragging the plow across the head lands, to finish with one dead furrow in the middle, for there would be too much loss of travel across the ends.

Neither would I begin as before and plow around it and finish with a short dead furrow in the middle, for I should do all my turning on newly plowed ground, thus undoing in part what I had just done. Nor would I divide it, as is very common, into

three or four lands and plow around each until done, for I should then have as many dead furrows as there were lands.

I would prefer, rather, having staked out the piece into three equal sections, each of equal length with the piece, first to back furrow the two outer ones, and then go around the middle one, finishing with one dead furrow in the middle of the last one, and one ridge in the middle of the other two sections. (See Fig. 9.)

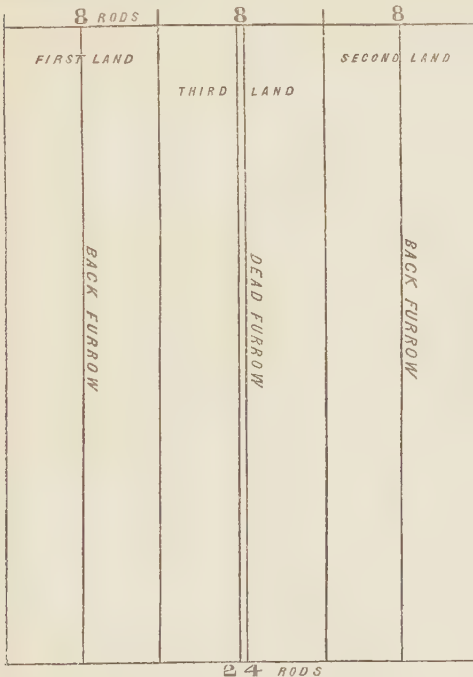


FIG. 9. Showing last method of Staking and Plowing.

If the dead furrows and ridges are an objection I would commence with a short back furrow, sixteen rods long, whose ridge and ends should be equally distant from the sides and ends of the piece, and plow around this until the entire land was completed, with no turning upon plowed ground, with no dead furrows and with a single short ridge, sixteen rods long in the middle. (See Fig. 10.)

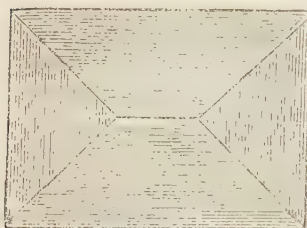


FIG. 10. Showing plan of laying out and plowing.

Should the piece be a triangle, the central point may be found, and three furrows, parallel and proportionate to the sides, and as short as possible, may be turned upon it. Starting thus the work may be continued from the centre outward, until the whole piece is finished, when it will be found that no ridges or dead furrows have been made and the team has not stepped upon the newly plowed grounds.

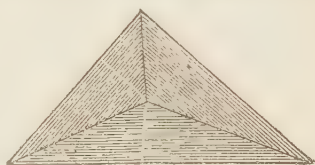


FIG. 11. Showing how to plan a triangular piece of ground without sides or dead furrows.

But we have not time to consider in detail the best methods of staking out lands. Fields differ greatly in size, shape and surface and the methods to be adopted must vary accordingly. The great points in every case to be secured, as far as possible, are the avoidance of all unnecessary travel; of dead furrows and ridges; of turning on freshly plowed ground, and in all hillside work, the securing the assistance, rather than the opposition, of the force of gravity. (See Fig. 12, opposite page.)

6. The depth of our plowing should also be governed by circumstances and vary with the character of soils and the objects had in view. Lands covered with a tough witch grass sod, taken up to be manured and after a year or two to be laid down again, should be plowed deep enough to bury the fertilizers applied for their enrichment, without disturbing the inverted sod. In such cases nine or ten inches is generally a sufficient depth. Skim plowing, to bury manure, should be as shallow as it can be consistent with good work. Four inches is a fair depth for this. In ordinary plowing, for pulverization only, seven inches does well; but in old fields, the top of whose subsoils has been compacted by the repeated treadings of teams, that have plowed it an hundred

times before, into a crust as hard almost as stone, the plow should be let down to such a depth as will enable it to crush this and destroy the impervious barriers, thus separating the lower from the upper soil. Professor Gould says of soils, "those which have the greatest amount of capillary porosity will condense the greatest amount of manurial substances on their internal surfaces; will retain them longest against the adverse solvent action of waters, and will give them out most readily to the rootlets of the growing plant." The deeper therefore the pulverization the greater will be the proportion saved of the manure applied for their fertilization and the less the proportion carried by rains into the subsoil.

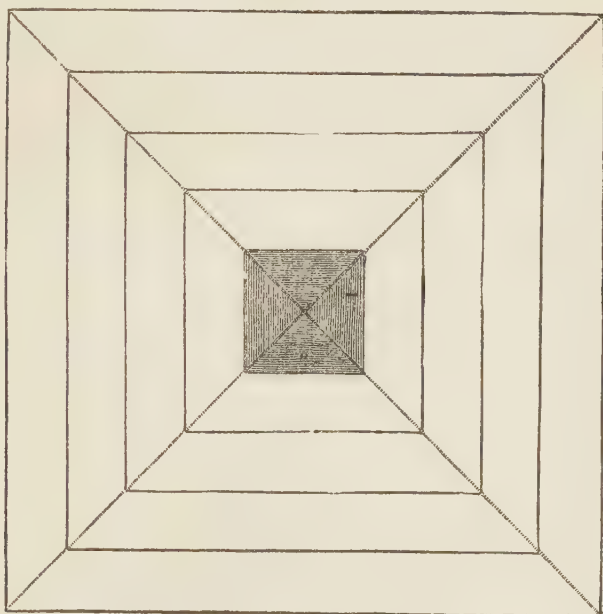


FIG. 12. Showing how to plow a square piece of ground by back furrowing, so as to avoid dead furrows and ridges.

It is asserted by a committee of the New York Agricultural Society that the average depth of plowing in that State is only four and a half inches. Is it more than that in New Hampshire? If not, by adopting a system of nine inch plowing, we may, many of us, bring up from beneath a new farm to take the place of the

old one, of which, perchance, in this day of novelties, we have grown tired. By doubling the depth of our plowing we may double the productive capacity of our farms.

7. The width of a furrow in ordinary work should not be far from once and a half its depth, or about in the proportion of ten to seven. When, from the nature of the soil, perfect pulverization cannot be secured at this width, it should be lessened until the furrow slice is stirred throughout. On tenacious sod lands, where the object in view is inversion rather than pulverization, its width may oftentimes be twice its depth.

8. And here arises an interesting question. Shall we lap our furrow slices one upon the other, or shall the last, completely inverted, lie flat upon the bed from which its predecessor was taken?

On sod lands there are several advantages in lapping them. Thus laid, a greater surface of fresh earth is exposed to the action of the elements than when laid flat with both their edges covered. A portion of the turf, thus turned under, lies elevated a little above the furrow's bottom, so that the open passage beneath, besides serving as an underground drain, if needed, admits air to hasten the sod's decomposition.

Disadvantages also attach to this mode of plowing. Grass is apt to spring up between the furrow slices, to the prejudice of the next crop, particularly if a hoed one. The skim plow sooner strikes the unrotted turf and must be run at a less depth than on land plowed flat.

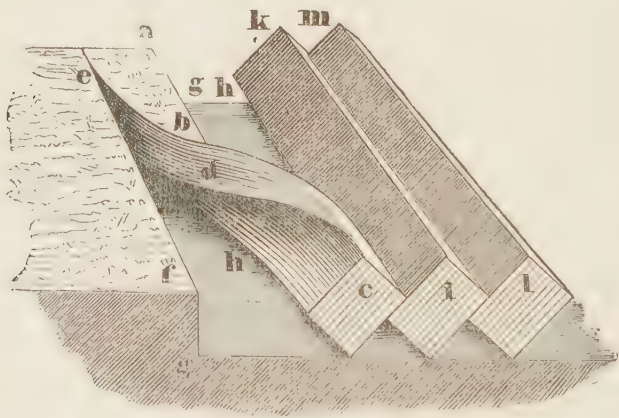


FIG. 13. Plowing with Lap Furrows.

Land plowed flat presents an even surface for the skim plow, the harrow, the cultivator, or whatever implement be used upon it. The sod is all buried and at a uniform depth. Theoretically the grass is all squelched, but practically not quite, though nearly so.

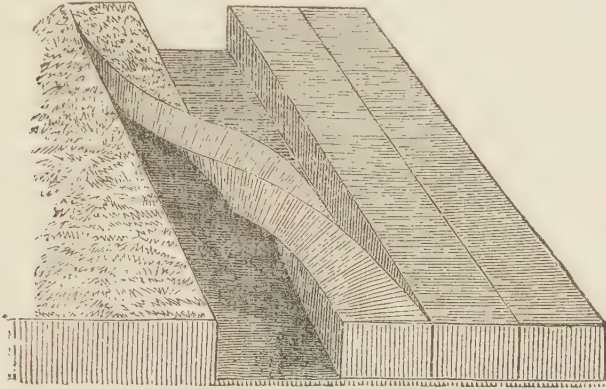


FIG. 14. Plowing with Flat Furrows.

I have sometimes used for breaking up grass ground a plow whose land side and colter stands at an angle of about eighty degrees with the plane of its sole, cutting a beveled edged furrow slice, which, as it turns over, wedges itself against the edge of its predecessor and lies nearly but not quite flat, with a small space between it and the surface of the subsoil. On my own farm there has been found attaching to such kind of plowing more excellencies and fewer objections than to any other.

9. There is one other point to which I wish to call your attention which, I fear, I may have already wearied, and that is thoroughness. Let us be honest in this work of plowing and not deceive ourselves to our own hurt. If we put in the plow, either to invert the sod, to bury the weeds, to pulverize the soil, to cover the manure, or for what purpose soever it may be, let us be content with nothing but thorough work. Let us have no balks, covered or open; let us leave no corners unturned for the choke cherries and raspberry bushes; let us finish every headland to its outmost verge; let every furrow, however long, be straight; let every weed and grass blade be buried from sight, and one uniformly fair surface proclaim us good farmers by our work well done!

I know of no place where a rational happiness is more likely to be found by a farmer, than between the stilts of a good-running plow, in a clean, straight, furrow, in a field he can call his own. He walks a man there, dependent upon no one but his own Maker, stimulating and assisting the forces of nature, and manfully and honestly earning his bread.

10. But, as now conducted, plowing on a large scale, is felt to be a slow and expensive process, and this new spirit of a new age now everywhere abroad, is yearning for plows that will turn a dozen furrows at once, to be drawn by a steed whose breath is scalding hot and whose muscles never tire. The great plantations of the South, and the boundless prairies of the West, together with the broader fields of the East, demand the steam plow, that will turn ten acres a day, at an expense of one dollar per acre.

This great problem, for a long time studied, has been as yet only partially solved. But science and mechanical skill have joined their highest efforts, and its perfect solution is near at hand. With what earnestness it is studied, may be inferred from the fact that in 1871, our government alone issued no less than thirteen patents for steam plows, all possessed of individual excellencies, although no one has proved a complete practical success.

The plow has ever been the symbol of our occupation. It is older than the pyramids. The once fertile but now desert plains of Nineveh and Babylon knew it. The valley of Esdrelon, the delta of the Nile, the campagna of old Rome, the fields of Europe and the wide expanses of our own land, have all submitted to its kindly influences and evinced their gratitude therefor, by abundant harvests. Wherever man has passed from the wandering habits of the savage or the nomad to the settled life of civilization, he has ever found the plow indispensable to his very existence. Its journeys exceed in length those of all the ships and locomotives that have traversed sea and earth; and the vast revolutions of our planet measure less than the outgoings and incomings of its furrows.

Its victories have been greater than the victories of the sword, for it has subdued sterility, it has awakened to activity the inert forces of nature, it has covered the naked plain with verdure, it has fed our race and caused the solitary place to be glad "and the desert to rejoice and blossom like the rose."

THE MANAGEMENT OF THE HORSE.

[Report of Remarks of Col. JOHN MCNEIL, of Concord, at the Nashua Meeting of the Board.]

HALTER BREAKING.

The young colt should be taken in hand sometime within two weeks of its birth. The best place to approach him is in a roomy pen in the presence of its dam, where there is space enough for a good struggle which in nine cases out of ten will occur. He should be caught by placing one hand on the breast under the neck and the other over the opposite hip, and this should be done by no mere boy or timid person, but by one who has strength and courage enough to hold his grapple when he once gets hold. This operation should be repeated until he is free from alarm and ceases to contend. A strongly-made and well-fitting head-halter should then be put on, and there should be plenty of straw or sawdust, or other bedding in the pen, so that when the colt falls down as he usually will, he may fall upon something that will not injure his bones. After he has given up to the halter, he may be led round the yard or attached to the thill of the wagon with its dam and taken out to see the sights which sooner or later he must become familiar with. Nothing is of more importance than to familiarize him at this age with the noise of the cars and whistle of the engine. If this fear is overcome in infancy and in his dam's presence, there will be little trouble afterwards. The handling and haltering should continue from time to time up to the period of weaning, avoiding too long journeys and fast driving. The dam should never be driven so as to cause much heat or perspiration, as heated milk often sickens the colt.

WEANING.

At the age of not less than four months, commence weaning. Let the colt remain out in the open broad day-light, where it can have plenty of green food and natural exercise. Let him nurse morning and evening for the first week, then once a day till the dam ceases to give any considerable quantity. The old practice of taking the colt directly from its dam and placing him in a dark pen or stall and feeding on dry hay and water is radically wrong. Young animals especially require the full influence of light, heat, exercise, and green food, and if deprived of them, constipation ensues, which is the sole cause of the inverted anus so disagreeable in mature years. Young eyes are also badly affected by the exclusion of light, and who knows but what the habit of shying is attributable to defective eyes caused by injured vision in early life? Deprived of these influences, but very little growth is obtained during the first six months, or till they are permitted to go out of prison and enjoy liberty and light once more. From the time of weaning to the age of four years the colt should have, as a rule, his comparative liberty. The process of biting may be completed however during this period which will be treated upon next in order.

BITTING AND HANDLING.

For the ultimate usefulness, pleasure, safety and profit nothing is more essential than that the horse should be well bitted. This can best be accomplished by degrees while the colt is yet too young for service. The old system of using a biting bridle with a large, cumbersome bit containing toggles for the purpose of tickling the colt's tongue is too inhuman to be considered. Commencing the fall or winter after the colt is two years old, prepare a light open bridle with a small snaffle bit, both fitting the head and mouth as you would wish a glove to fit the hand, not too tightly and especially not too loosely, as this will enable the colt to get its tongue over the bit, and when that habit is once acquired it is extremely hard to overcome. After arranging the bridle so as to secure a perfect fit, put it on without check or rein of any kind and let the colt have the liberty of the field, yard, or pen, for an hour or two at a time, two or three times a week. The winter after he becomes three years old, repeat the last year's process, and occasionally put on the harness and headstall with a gentle check for an hour at a time. In this way you will find

whether you are to have a high-headed horse or not. Never check more than one notch higher than your colt naturally carries his head as there is danger of getting what is called a hard mouth. After becoming familiar with the harness it should be driven with a steady hand to the depot and about town, stopping occasionally, and never forgetting to say "whoa!" so as to be distinctly heard every time you stop. At this age, and even before, commence handling their legs and feet, using a hammer to rap the feet in imitation of driving nails for shoeing. Many valuable horses have been ruined in the first attempt at shoeing, and many more have been deprived of half their value by being badly frightened and acquiring habits of nervousness seldom if ever forgotten. Handle and rap your colt's feet, as often as you think necessary, but always with mild words and gentle hands. At this age he should be taught to back, also to respond to the "chirrup" and "whoa." Never forget to reward well doing with kind words and a gentle pat, as the human hand and voice are potent instruments for good or evil.

However desirable all this training in early life may be, it is still more important that the animal should have a well grown and fully developed body by the time it becomes four and a half years old, which can only properly be obtained by giving a full supply of coarse food, with unrestrained out-door exercise. Always remember that if the colt cannot be handled by a proper person, it had better never be bridled till it is four year old.

BREAKING.

The winter after the colt is four years old, the process of breaking may be completed by harnessing and driving every day or several times a week, always using a proper bit and good fitting bridle, with the check just high enough to keep the head in a natural position. At this stage of the breaking, the colt should be allowed to stand in the shafts of the wagon or sleigh in some secure place for an hour or more at a time. This will do more to bit, and overcome high tempers, than driving. An open barn floor where there is sufficient room for the carriage or sleigh, and a chance to tie a rope or strap to each ring of the bit, is a very excellent place for the colt to stand.

As the development of muscle for future use commences at this period, great care should be observed in not overdoing the business. The muscles of the horse are just as liable to become sore

as human muscles, and he who has ever experienced the effects of the first day's mowing, or better still, the effects of the first day's skating, will naturally have more sympathy for the colt than one who thinks that horse flesh can endure without limit. Many valuable colts have been injured at this period by being driven so far, and handled so roughly, that they feel compelled to fight rather than endure all that is required of them. High-spirited animals are more inclined to contend for liberty than those denominated "lunk heads." Therefore, as a rule, the colt should not be driven more than two miles at once, until he has acquired muscle for more work. Occasionally a colt of great spirit and endurance refuses to be satisfied with two or three miles; therefore, let him have six or eight to-day, to-morrow, and so on, stopping him a few moments, once in a mile or two, always using caressing words and gentle pats. If he refuses to show the "white feather" under this treatment, you may be assured that you possess an animal worthy of extra care and attention.

At this age and period of life, the colt will naturally show signs of speed if he really possesses the elements. A long chapter might here be given upon the subject of training and developing horses for trotting purposes. But as my remarks are designed to give information to farmers and gentlemen, the speaker will make no suggestion upon that subject.

SHOEING.

Whatever else we may do to the horse in violation of nature's laws, we cannot afford to deprive him of the full use and soundness of his feet. As improper shoeing is in many cases the direct cause of lameness, let us examine the foot in a state of nature, or at least before man commences his improvements with hot iron and sharpened steel. If we observe the colt's foot in the autumn after a full season at pasture, we shall find the toe and heels hard and prominent, with the quarters worn off, unmistakably indicating that these points are the strongest parts of the horny covering which surrounds the sensitive tissues and bones within. It can hardly be expected of horse-shoers that they should thoroughly understand the physiology of the horse's foot; but they might without much trouble or expense become familiar with every bone of the foot and their relations to the hoof. A foot can be easily obtained when some horse dies. It can be boiled to pieces or sawed in two; either way will give much valuable infor-

mation to any person of ordinary intelligence. We recommend them to observe nature and follow her teachings. Putting on what is called "spring heels" is a perfect violation of nature's laws, for the shoe is made to bear upon the very point where it is found worn away on the natural foot; therefore fit the shoe so that it may rest upon the toe and heel, using the rasp to lower the quarters so that they may not receive the pressure which is the invariable cause of what is termed the "quarter crack." As there are two distinct classes of feet that require opposite treatment, in order to illustrate what should be done in each case they will be called the "concave" and the "flatfoot;" they are as unlike in their shape almost as the cup and saucer. The concave, or cup-shaped foot grows faster at the heels than at the toe, and therefore should be always pared as low as they will bear at every shoeing. The flat or saucer-shaped foot grows much faster at the toe than the heels, therefore at each shoeing pare off the toe and shorten it as much as possible, never cutting the heels at all unless to level the surface for the shoe, which can be much better done with the rasp than the knife. The habit of searing the hoof with hot shoes is a most pernicious one, as it completely destroys the life of that portion which is burned, and has a tendency to deaden and contract the hoof beyond the burned surface. A smith who cannot fit a shoe without burning it on, should not be allowed to do the work.

For driving purposes, light shoes are preferable with narrow webs; five nails will hold such shoes as long as any shoe should be worn, three on the outside and two inside, with the holes farther apart than when more nails are used. The more nails that are used, of course the more the hoof is weakened, just as the more wedges driven into a log the more easily it is opened. If more nails are used the foot has less chance to expand, and in many instances contraction is caused by using eight or more nails. The practice of filing the hoof about the clinches is inexcusable, as it in no way improves the looks of the foot and removes the strongest portion of the hoof.

Young horses are more liable to interfere with heavy than light shoes. What reason can be given for using heavy, wide-webbed shoes? The heavier the sledge the severer the blow. The heavier the shoe the greater the concussion at each step. If the anatomy of the horse's foot is fully understood, the process of shoeing is as simple as any branch of mechanism.

FOOD.

In a state of nature the horse takes his food from the ground, a provision all wise—if for no other reason, because it secures a thorough mastication of whatever is taken into the stomach. The following diseases are supposed to be induced by receiving into the stomach imperfectly masticated food: stomach staggers, colic, crib biting, fits, heaves. All of these diseases occur much oftener when corn, cracked corn or meal is used. This grain possesses so much carbon that, taken into the stomach without thorough mastication, it is liable to generate some of the above-named diseases. To avoid the ill effects of imperfect mastication, the horse should take his food from the ground or within four or six inches; and when corn is used as a regular grain, the horse should be fed on hay first, so that digestion may commence on coarse material rather than on the most substantial grain taken from the earth; feed fifteen minutes on hay always before giving grain of any kind.

As a rule, the horse is an overfed animal. Less food properly given would give better health to the horse and less trouble to the driver. Six quarts of grain per day taken from the ground will afford more nourishment than nine quarts taken up as high as the horse's breast. Farmers' horses are usually kept eating from morn till noon, from noon till "dewy eve," and so much of the night as they do not require for sleep. This is all wrong. Every horse should be fed and watered regularly three times a day, except in winter, when farmers' horses that are not worked will not require watering more than twice in twenty-four hours.

Gentlemen's driving horses should be fed and watered with great care, and as livery horses should come under the same regimen, I will state it in detail: Commence feeding in the morning, and at every meal if practicable, on hay for fifteen minutes before grain is given, always from the ground or within six inches. The horse should be watered within fifteen minutes after he has finished eating. If he takes a proper allowance at that time, he should not be watered again till he has eaten again. No horse should be started out to do active work immediately after finishing a meal, as digestion is sometimes wholly suspended by violent muscular action. Never water before feeding. Another reason for feeding low is, that the muscles of the neck, shoulders and legs naturally require this kind of action, while if fed high up, another class of muscles are brought into action, which is thought

to be one great cause for the stretching attitude assumed by horses of heavy neck and shoulders, as well as for the sprung knee and hollow back, which is so often seen in old stable horses or gentlemen's horses which have been fed from high racks many years.

GENERAL MANAGEMENT.

For some reason which has never been fully explained, the horse has a desire at times, and more especially after a hard journey, to throw himself upon the ground and indulge in a good roll, tumbling from one side to the other. Upon regaining his feet he bears the appearance of being refreshed. Therefore it is recommended to let horses have a chance once in a few days to perform this operation. The practice of washing the legs after labor or exercise is not advisable unless they can be rubbed thoroughly dry before the horse is put up. If water is to be used at all on the legs or body let it be done in the morning or just before a drive.

The practice of clipping is gradually wearing away; it has been found that in this climate it is hardly possible to keep the horse from suffering after depriving him of a heavy coat of hair. It is only justifiable in cases where the horse is required to perform much rapid work and has the advantage of a warm stable and plenty of clothing. As a rule horses are harnessed too tightly, it is quite as uncomfortable for the horse to work in a tight harness as for man to work in tight clothes.

As a remedy for the scratches, grease and yellow water, common pitch tar, has been found almost a specific. The process of administering is very simple and easy: Take a square piece of tissue or other thin paper and form it into the shape of a tunnel, then drop in a large spoonful of tar, turn over the edges of the paper, raise up the horse's head, and with one hand open his mouth, with the other put the paper as far into the mouth as you can, holding the head up for two minutes. Frequently, but one dose will be required, but in old, chronic cases, three doses given in nine or ten days may be required. The horse should not be worked during the time.

The practice of stuffing the feet with cow manure is not advisable, as the ammonia contained in the material has the effect of heating rather than cooling the foot. Use scalded shorts, clay or moistened hard pan when any stuffing is deemed necessary.

THE SIZE AND STYLE TO BREED.

The present prices which good, substantial, well-broken and well-disposed horses command is a matter which should not be lost sight of by the breeders of New England, and as New Hampshire horses are held in high repute, it behooves our farmers to consider how they should proceed in order to obtain success. As a rule our horses are rather under size. The most salable size is from fifteen to sixteen hands in height and weighing from nine to eleven hundred pounds. Experience has shown that the dam should possess a strong and rugged constitution, with flat bones rather than round, and should also be at least one size larger than the sire. No special regard need be observed as to the action of the dam, for it is almost certain that the colt will inherit the sire's gait.

STRUCTURE AND DISEASES OF THE HORSE'S FOOT.

[The following, prepared by the late Prof. Thomas R. Crosby, M. D., of the New Hampshire College of Agriculture, was given originally as a lecture to the farmers of New Hampshire, at a mass meeting at Manchester. It was placed in the hands of the present Secretary of the Board of Agriculture for publication. The primary delay in publishing was caused by a want of the requisite facilities to obtain drawings and engravings to properly illustrate the subject. The author then put it into the hands of the late Commissioner of Agriculture, Gen. Capron, with the understanding that the illustrations could be duplicated and used both at Washington and in our own state. But the sudden death of Dr. Crosby interrupted the arrangement, so that we have been obliged to vary from our practice and copy from the Department of Agriculture, a paper that we expected to issue originally. Its completeness and importance justify us in giving it in full. — SEC'Y.]

Probably more than \$500,000,000 are invested in the horse stock of the United States. This value is exceeded only by that of cattle by a small percentage. The average value per animal is not far from \$75. This low value results, in part, from including in the calculation animals of all ages, and all degrees of health and soundness. Without doubt one great cause of this low average value is the wide-spread carelessness that obtains among farmers in regard to breeding. The idea that "a colt is a colt," leads to entire indifference to the source from which it is obtained. Consequently our pastures, highways, and markets exhibit a large proportion of inferior animals that hardly pay for the raising. But a very general and powerful influence in the depreciation of horse values is found in constitutional and local defects and disabilities, which are probably exhibited in some form of lameness eight or nine in every ten cases.

Consideration of the structure of the foot of the horse, of the manner in which it is shod, of the roads on which it is used or abused, and the general lack of care in its management, lead us to wonder, not that lameness is so frequently met with, but rather that it is not more frequent — that any horse escapes it.

Lameness *may* exist in any part of either extremity, from the shoulder or hip to the foot. But, practically, its frequency increases as you go from the body toward the feet. For one case of *shoulder* lameness, except as the result of direct violence, you will see many of the foot. In nine cases in ten the seat of the lameness will be found within the terminal twelve inches of the limb, and within this limit the parts that most frequently suffer are those inclosed by the hoof. A brief glance at the anatomy of the foot will show the probability of this statement.

The horse stands and goes upon the end of one finger in each limb, and bears his entire weight on four such finger-ends. These ends are covered or surrounded by hard, horny cases, *the hoofs*. The hoof being nearly unyielding in the artificial condition of those animals that are kept shod with iron shoes and stabled upon hard and dry floors, even the most moderate degree of inflammation of the soft parts inclosed must be productive of great pain. Every one who has suffered from a felon knows the agony it causes; but the felon is only an inflammation, with suppuration, under a tissue less dense, less unyielding, than the hoof of the horse. In addition to this, the inflamed tissue, at every step, is compressed between the bone, the actual point of support, and the investing hoof, by a portion of the weight of the body.

ANATOMY OF THE FOOT.

The foot of the horse is made up of a variety of tissues. Commencing at the outside, we find a dense horny envelope, *the hoof*, and within this, *fascia*, *cartilage*, *cellular* and *fibro-cellular tissue*, *vessels* and *nerves*, and still within these a center of bone. The bones of the foot are portions of the general frame-work or skeleton, and correspond in their general plan of structure with the terminal bones of the fingers in man. Before proceeding to a description of these, we will give a moment's attention to the comparative anatomy of the part.

The bones, muscles, blood-vessels, nerves, and other tissues of the fore legs of the quadrupeds of the mammalia are constructed

Fig. 1

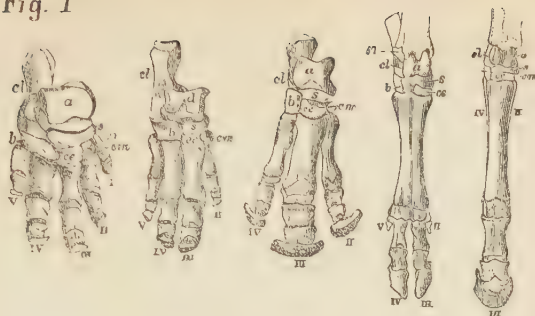


Fig. 2

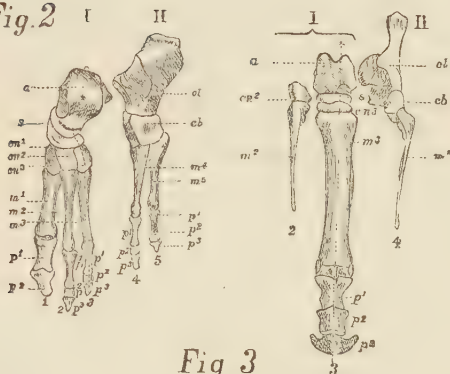


Fig. 3

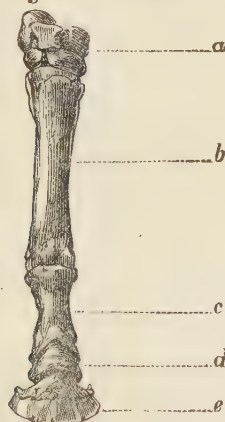


Fig. 1. View of the digits present in the feet of different animals.

Fig. 2. Plan of construction of horse's foot.

Fig. 3. Bone of fore leg; front view.

upon the same plan as the arm of man, having essentially the same parts, and these with the same mutual relations. Whatever difference appears may be traced directly to that economy in nature which adapts the simplicity or complexity of structure to the extent, variety, and degree of use. So the greater simplicity of structure observed in the fore leg of the horse, compared with that of the arm of man, is due to the fact that its use is limited to the support of the body and its progression. By reference to Figs. 1* and 2†, the various bones of the legs may be compared to corresponding portions of the human body. By reference to Fig. 1, the plan on which the simplification of the bony tissue of the animal foot, as compared with the hand and foot of man, is accomplished, may be seen.

As will be noticed, the relations between the parts of a foot are constant. Whatever parts are dropped are from the sides, with corresponding modifications of the carpal and tarsal elements. This dropping of digital elements to contribute to greater simplicity of structure is not confined to the foot of the horse; indeed, it has its most complete manifestation short of obliteration in this animal, but is seen to a less extent in other animals. Taking five toes as the highest number present in any land mammal, we have a reduction to four in the hippopotamus, to three in the rhinoceros, and two in the ox. The elements not used are frequently present in rudimentary form, as seen in the splint-bones of the horse and the two small toes in the ox and hog. Fossil skeletons of horses show that in previous geological eras horses have lived having, in addition to the fully developed single digit, two others, perfect as to form, but smaller in size.

The *anatomical* foot of quadrupeds consists of all the parts beyond the radius, or radius and ulna, of the anterior extremities, and the tibia, or tibia and fibula, of the posterior. This would include the carpal bones, (*the knee*,) and the bones below, of the anterior, and the tarsal bones, (*the hock*,) and bones below, of the posterior extremities. In point of fact, however, uses considered,

* FIG. 1. View of the digits present in the feet of different animals, from the elephant, having an equal number with man, to the horse, having but one; showing also the order in which they are dropped: I, first digit, corresponding to the great toe of man; II, second digit; III, third digit; IV, fourth digit; V, fifth digit.

† FIG. 2. Plan of construction of horse's foot from Allen: I, II, in each figure, represent corresponding portions of the foot in the human and horses foot: *a*, *cl*, *s*, *ch*, *cn* 1, *cn* 2, *cn* 3, bones of the tarsus; *m* 1, *m* 2, *m* 3, *m* 4, *m* 5, metacarpal bones; 1, 2, 3, 4, 5, digits; *p* 1, *p* 2, *p* 3, phalanges; x - - - , indicating an axis of bones constantly present in the foot of every mammal.

the foot of the horse is much more limited in its extent, including only the terminal phalanx — Fig. 2, “p. 3,” a portion of the middle phalanx “p. 2” and a sesamoid bone, *the navicular*, at the posterior aspect of the joint between the two. (Fig. 14,* “2,” “3,” “4.” Below the *carpus* (Figs. 3 † and 4 ‡, “a”) of the anterior, the *tarsus* (Figs. 5 § and 6 ¶) of the posterior extremities, the bones of the leg have similar common names, and are essentially alike in corresponding regions. Immediately below the carpus and tarsus is a single large metacarpal or metatarsal bone, called the *cannon-bone*, (Figs. 3, 4, 5, 6.) Upon either side of this is a rudimentary bone, the *splint-bone*, (see Figs. 4, 5, 6 and 7.) These two splint bones, expanded at their upper extremities, where they enter into the formation of the knee and hock joints, grow gradually smaller as they pass down by the side, and rather to the rear of the main bone, and terminate before reaching the fetlock joint. Below the cannon-bone, taking an oblique direction anteriorly from it, is the *pastern-bone*, (Figs. 3, 4, 5, 6, and 8,) (*long pastern, os saffraginis.*) In length it is from one-third to one-half that of the cannon-bone. Below this is the *coronet bone* (Figs. 3, 4, 5, 6, 9,) (*short pastern, lower pastern, os coronæ,*) which is nearly square in form; its transverse diameter being, however, greater than its vertical. The last bone terminating the extremity is the *coffin-bone*, (Figs. 3, 4, 5, 6, and 10,) (*os pedis.*) This bone is described as having a body and wings. Its general outline is semilunar anteriorly, superiorly it is convex, and posteriorly and inferiorly it is concave. In texture it is light and spongy, perforated throughout by canals, (Figs. 16 ¶ and 17 α through which blood-vessels and nerves are abundantly distrib-

*FIG. 14. Vertical section of the foot of the horse, copied from Owen: 1, pastern-bone; 2, coronet-bone; 3, navicular bone; 4, coffin-bone; 5, extensor tendon; 6, part of common flexor tendon; 7, deep flexor tendon; 8, posterior expansion of great cartilage; 9, soft cushion of the heel; 10, section of horny hoof; 11, sensitive hoof; 12, anterior section of the cartilage spreading over the coffin-bone.

† FIG. 3. Bone of fore leg, front view: a, bones of carpus; b, cannon-bone; c, pastern-bone; d, coronet bone; e, coffin-bone.

‡ FIG. 4. Bones of fore leg, side view: a, bones of carpus; b, splint-bone; c, cannon-bone; d, sesamoid bone; e, pastern-bone; f, coronet-bone; g, coffin-bone.

§ FIG. 5. Hind leg, front view: a, b, c, d, e, bones of the tarsus; f, cannon-bone; g, pastern-bone; h, coronet; i, coffin-bone.

¶ FIG. 6. Hind leg, side view: a, bones of the tarsus; b, splint-bone; c, cannon-bone; d, sesamoid bone; e, pastern-bone; f, coronet-bone; g, coffin-bone.

¶ FIG. 16. Posterior view of the coffin-bone, showing the openings into the interior canals, through which branches of the plantar arteries and veins enter: a, a, a, entrance to canals.

α FIG. 17. Section of the coffin-bone, showing the numerous canals for blood vessels and nerves.

Fig. 4

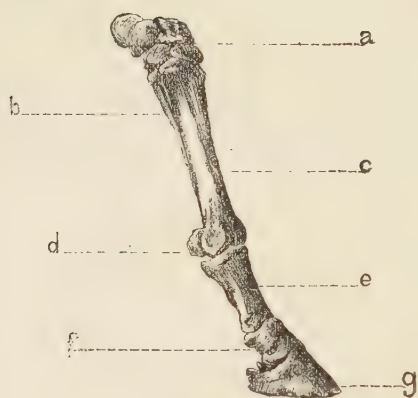


Fig. 5

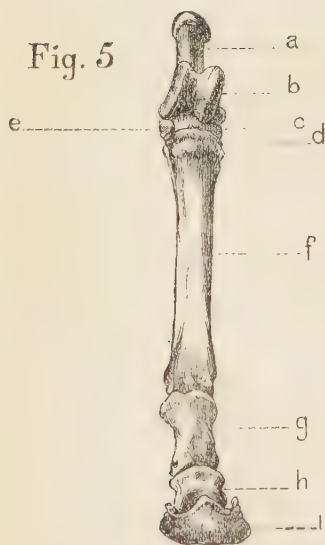


Fig. 6

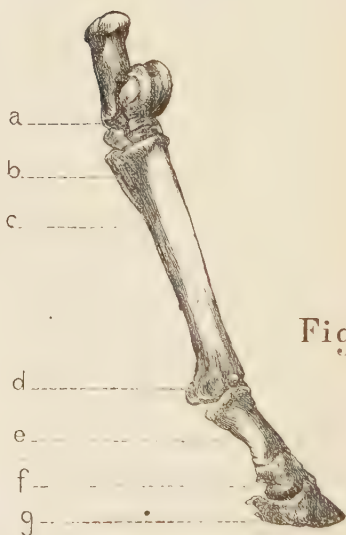


Fig. 4. Bones of fore leg, side view.

Fig. 5. Hind leg, front view.

Fig. 6. Hind leg, side view.

uted to the soft and sensitive tissues that cover it. The wings extend directly backward from the body, and support the lateral cartilages. Upon its superior aspect is a smooth and concave surface, placed obliquely to the body of the bone for articulation with the middle phalanx or coronet-bone. Applied to the joint between the coronet and coffin bones, posteriorly, and lying in the concavity of the coffin-bone, is a small bone of peculiar shape—the *navicular*, (Fig. 14, "3.") This is a sesamoid bone, being contained in, or attached to, the tendon of the deep flexor. It is from two to two and one-half inches long, three-fourths of an inch in width at its widest part, and half an inch in thickness. Two surfaces of this bone, meeting in front at an acute angle, are covered with cartilage and synovial membrane. The posterior surface is rough for the attachment of the tendon of the deep flexor.

Attached to the upper edge of the wings of the coffin-bone are the two lateral cartilages. They are irregular in form, elastic, and extend backward, giving form, substance, and elasticity to the heel upward as high as the pastern joint, and forward, so that only the width of the great extensor tendon of the foot separates them. In fact the fibrous investment of the tendon is attached to these cartilages.

This widely distributed cartilage may be observed passing downward and surrounding on every side the rough and knotty extremities of the heels of the coffin-bone, entering and filling up its sinuosities and taking strong attachment to these processes. It then extends horizontally inward, passing over the horny sole and bars, and, meeting the sides of the sensitive frog, intimately unites with it, forming one inseparable mass and filling together the whole interior area described by the sides of the coffin-bone. The upright or lateral portion of the cartilage forms with the horizontal portion passing inward a right angle, thus making together a hollow space or receptacle at the back of the coffin-bone that contains the spongy, elastic stuffing of the heels, together with the tendons, vessels, and nerves passing through the sole of the foot. The upper surface of the horizontal process of cartilage is full of scabrous elevations and depressions that defy dissection, among which is found a quantity of gelatino-ligamentous tissue. Beneath, or to the under surface of this horizontal layer, the sensitive sole and bar are adherent. As it approaches the frog or center of the foot, it loses its cartilaginous nature and becomes coriaceous, or rather ligamento-coriaceous, in texture, agreeing in this with the internal frog. — (*Cyclop. Anat. and Phys.*)

The horizontal portion or process of the cartilage, known by veterinary writers as the *stratiform* process, is of greater thickness and substance than the other parts. It is also of coarser

grain and more elastic nature. Both portions together communicate the general boundary of form to the lateral, posterior, and inferior parts of the foot. When the bars and the frog are thrust upward by pressure from without, they are acting against this same horizontal flooring formed by the cartilage and the frog, and are met by the depression of the bones of the foot forced down by pressure of the weight of the animal. The whole can then dilate exteriorly along with the posterior and more elastic parts of the hoof.

Several important purposes are answered by this extensive distribution of elastic fibro-cartilage—first the interposition of a layer of elastic tissue between the hard hoof and the hard bone prevents shock and jar to the body as the foot strikes the ground in walking or running; secondly, the coffin-bone not extending posteriorly much beyond the middle of the foot, except by its projecting wings, a large portion of the hinder part of the foot is made up of soft elastic cartilage instead of bone, materially breaking the force of the blow of the tread; thirdly, the general distribution of elastic cartilage serves to equalize the pressure of the bones of the foot upon the broader surface of the hoof; and, lastly, this arrangement of an elastic cushion, increasing in thickness toward the posterior aspect of the foot, affords an elastic support to the movements of the coffin-bone in the hoof, thereby aiding the elastic laminae upon the superior convex surface in support of the bone. While the toe of the coffin-bone is comparatively stationary, there is considerable motion of the heel upon the toe as a centre, thereby contributing to the extent, freedom, and ease of movement of the foot.

Molded upon the surface of the coffin-bone, over its entire extent, is a thick, villous, highly vascular, and sensitive membrane having the general name of the *sensitive foot*, besides having several local names derived from the part of the hoof under which it lies, as *sensitive laminae*, *sensitive sole*, and *sensitive frog*.

This tissue is derived mainly from the skin. It may be said to be a process from the skin, covering the coffin-bone, and altered in its structure to adapt it to its office as an excretory membrane. It exactly corresponds to that portion of the human skin which produces the nails. The proper skin of the leg, as it arrives at the foot, becomes thickened and altered in its structure, constituting the mass around the summit of the hoof, to which veter-

inary writers have given the name of *coronary band*. This is lodged in a groove seen around the upper edge of the horny wall, and from this the straight fibers of the wall are secreted. From the coronary band there is a prolongation of the skin downward over the coffin-bone. This tissue is thrown into permanent folds or laminae, the *sensitive laminae*, between five and six hundred in number, arranged lengthwise of the foot. They secrete matter which enters into the formation of the horny wall, to the laminae of which they are very closely united. According to Virchow, each lamina corresponds to a single papilla, as seen on the surface face of the skin. Similar tissue, thickly studded with secreting papillae, covers the inferior surface of the coffin-bone, the fibro-elastic frog, and the widely distributed cartilages, already mentioned. This tissue is richly supplied with nerves and blood-vessels, the latter forming large plexuses which extend to and above the margin of the hoof.

The elastic laminae are found around the whole convex surface of the coffin-bone, having a breadth of about one-tenth of an inch and a length of about two inches in front, decreasing to an inch at the heels. These laminae, much reduced in size and importance, are continued over the bars into the centre of the foot. Each lamina consists of a single plait or fold of two layers of membrane, which apply closely to, and are firmly attached to, two corresponding surfaces of the laminae of the horny hoof. Either in the laminae themselves, or in the fibrous membrane on which they rest, and which is the medium of their union with the bone, great elasticity resides, so that the coffin-bone, with the weight it sustains, receives a large part of its support from the laminae, acting as hundreds of elastic springs. It is this structure and arrangement that aid greatly in obviating shocks and preserving the integrity of the soft tissues at the bottom of the foot. By taking two strips of paper and folding them together in regular, even plaits, we have an illustration of the method of union between the soft and sensitive and the horny laminae. If, in addition, one of the layers be considered elastic, the philosophy of the elastic suspension of the foot would be obvious.

The tissue constituting the sensitive sole, averaging perhaps one-eighth of an inch, thinner over the frog and thicker over the heels, is even more fibrous, vascular, and sensitive than the laminae. It is closely connected with the fibrous tissue of the

sensitive laminæ in front and the covering of the heels and frog behind. From it the horny sole and frog are secreted.

The sensitive tissues that invest the bones of the foot are covered and protected by a thick, dense, horny cap or box, *the hoof*. (Fig. 11.) The physiological relation of the hoof to the parts which it covers is essentially the same as that of the human nail to the parts covered by it. Functionally, its relations are more extensive and complete, and whatever differences exist in structure, in form, or extent of development, come from modifications for special use.

The hoof consists of three portions, which are so closely united as to seem but one; yet, by maceration, or by boiling, they can be separated. These are the *wall* or *crust*, the *sole*, and the *frog*.

The wall (Fig. 13, * *e*, *e*, *e*) is all that part of the hoof that is visible below the hair when the foot is placed upon the ground. It is in the form of a cylinder cut across obliquely at the top. It is deepest in front, from three to four inches, and grows gradually less in depth toward its posterior aspect. This wall, which is secreted mainly by the coronary band, and partly by the sensitive wall beneath, is in front about half an inch in thickness, becoming thinner on the back side as it extends around the foot. It has an edge bearing upon the ground of about half an inch around the outside of the bottom of the foot. (Fig. 13, *e*, *e*.) Upon the inner side of the foot the wall is thinner than upon the outside.

The wall is divided into toe, quarters, heels, and bars, superior or coronary border, inferior or solar border and laminæ.

Passing any special description of the borders, the laminæ deserve more particular attention.

The *laminæ* or *lamellæ*, (Fig. 12,) are the very numerous, narrow, and thin plates which cover the entire interior aspect of the horny wall. They are in length from two inches in front to less than an inch at the heels. They are also visible over the bars. They have a very constant width of about one tenth of an inch, and extend from the lower to the upper border of the hoof, are essentially parallel to each other, and have a free edge and two free surfaces. Each lamella is received into and is very closely united to two of the lamellæ of the sensitive wall. By

FIG. 13. Ground surface of hoof, from Miles: *a*, toe; *a* 1, inner toe; *a* 2, outer toe; *b* 1, inner quarter; *b* 2, outer quarter; *c* 1, inner heel; *c* 2, outer heel; *d*, *d*, *d*, sole; *e*, *e*, wall of the hoof; *f*, *f*, the bars; *g*, *g*, the commissures; *h*, *k*, *l*, the frog; *h*, part under the navicular joint; *k*, boundary of the cleft; *i*, *i*, the bulbs of the heels.

Fig. 7



Fig 8



Fig.9



Fig. 10

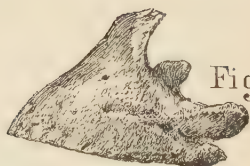


Fig. 11

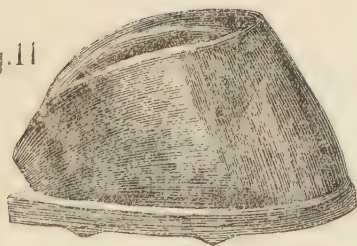


Fig. 12



• Fig. 7. Splint bones.

Fig. 9. Lower pastern, or coronet bone.

Fig. 11. Side view of a nearly perfect hoof.

Fig. 12. Vertical section of the hoof, interior view, showing the horny laminae.

Fig. 8. Pastern bone.

Fig. 10. Coffin bone.

this arrangement the surface by which the horny wall is attached to the sensitive hoof is very largely increased, (by exact calculation of Dr. Evans, increased by twelve times,) and this attachment, while possessing great strength, has great elasticity, and admits of considerable motion between the horny sole and the coffin-bone contained in it.

The *toe* (Fig. 13, *a*) constitutes about two-thirds of the wall, and is sometimes subdivided, for minute description, into toe, inner toe, and outer toe, (Fig. 13, *a*, *a1*, *a2*.) It is the deepest and thickest part of the wall, and stands at an angle, in the average of good feet, of about forty-five degrees. When the angle of inclination is much greater than this, the feet are designated as flat and weak. Flat and weak feet usually obtain in large and heavy animals, and it has been thought that the foot is flattened, the anterior wall drawn down by the weight.

The quarters (Fig. 13, *b1*, *b2*) are the portions on each side, midway between the toe and the heels, and are designated as the inside and outside quarters. The fibers composing them run obliquely upward and backward, parallel to those of the toe. The quarters slope downward and backward, and become thinner as they approach the heels.

The *heels* (Fig. 13, *i*, *i*) are the two protuberant portions of the wall by which it is terminated posteriorly. The wall here is shortest and thinnest, the fibers being only about an inch in length, and not exceeding the fourth of an inch in thickness. While, in its natural state, there is some degree of elasticity in the entire wall, there is much more in the portion that covers the heels.

The *bars* (Fig. 13, *f*, *f*) are reflections of the wall in toward the centre of the foot, on its ground surface. They gradually approach each other, and come together a little in front of the centre of the foot. The bars are usually regarded as parts of the sole, but maceration shows them to be separable from the sole, but inseparable from the wall. In the natural, healthy foot, that has never been shod, the bars appear as sharpened prominences, like braces, between the centre of the foot and the heels. The best writers agree that they are well adapted to keep the heels open, and prevent contraction of the hoof. In the unshod foot, the bars have a bearing upon the ground, second only to that of the edge of the wall.

The *sole* (Fig. 13, *d*, *d*, *d*) fills the space between the wall and the bars. It is in the form of an irregular arched plate, the concavity being toward the ground. It is firmly attached, by its outer convex edge, to the inner surface of the solar border of the wall, while its inner straight edges are attached to the bars. It has been described as joining the frog, but throughout its whole extent the bars intervene between the sole and the frog. The centre of the sole is the thinnest portion of it, and it also constitutes the summit of the arch. The lower circumference of the arch, which is also the thickest and strongest, everywhere abuts against the sides of the wall. The result of this mechanism is, that at every step, as the weight is thrown upon the foot, the coffin-bone descends, elongating the elastic fibrous tissue connected with the sensitive laminae, and, pressing upon the highly elastic tissue of the sensitive sole, which rests upon the arch of the horny sole, causes the latter to yield and descend. The wall being elastic, especially toward the heels, is readily pressed outward, so that the ground surface of the foot is larger while bearing the weight than it is when the pressure is removed. Whenever the weight is taken off, the wall springs back, and the sole recovers its arched form. By this means the step is rendered elastic, jarring is obviated, and injury to the sensitive sole and sensitive frog is prevented.

The frog (Fig. 13, *h*, *k*, *l*) is a wedge-like mass filling the angular space between the bars, and consists not of solid horn, as might at first seem, but of a series of elastic arches. It has been not inaptly compared to an elastic keystone received into an elastic arch, communicating in some cases, and admitting in all, the springing movements of which such an arch is capable. The base of the frog lies between and connects the posterior curved portions of the hoof, limiting to some extent their action. The sides are connected with the bars by their upper edges, leaving upon the ground surface two deep channels between the lower border of the bars and frog, which have been termed the commissures of the frog. (Fig. 13, *g*.) The horny material arching over these channels is called the *arch of the commissures*. In the centre of the frog, as we look upon its ground surface, is a deep, narrow depression, the *cleft of the frog*, (Fig. 13, *k*), which extends farther into the soft tissues of the foot than the commissures. This cleft is arched over in a similar manner; and the

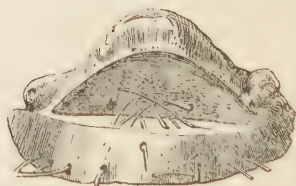
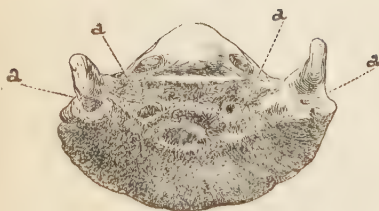
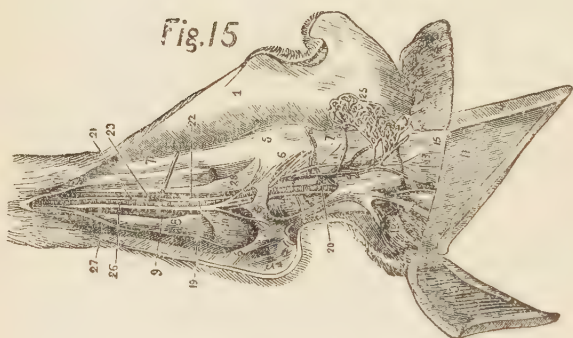
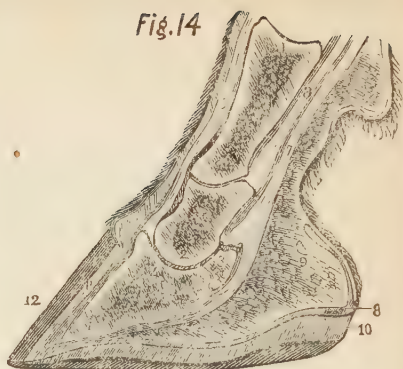
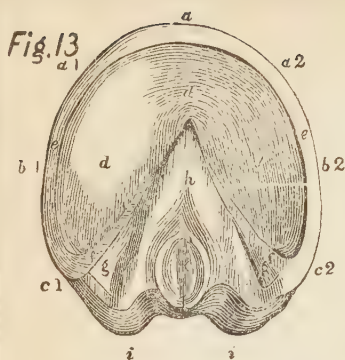


Fig. 16

Fig. 17.

Fig. 13. Ground surface of hoof.
Fig. 14. Vertical section of horse's foot.
Fig. 15. Dissection of horse's foot.
Fig. 16. Posterior view of the coffin bone.
Fig. 17. Section of the coffin bone.

cone-like mass, as viewed on its inner upper surface, has received the name of *frog stay* or *bolt*.

Looking upon both the exterior and interior surface of the frog, we see that with the bars it forms three elastic foldings, which act as springs to keep the heels apart and the foot well spread. In the natural, unshod foot, the frog, though protected to some degree by the solar border of the wall and by the sharp prominences of the bars, must still receive pressure at each step. The order of force in which the different parts of the foot press the ground in walking, running, etc., has been stated to be as follows: First, the solar body of the wall; second, the bars; and third, the frog. In the foot that has never been shod the frog has nearly if not quite as much pressure in the full step as the wall. In rapid stepping, the edge of the wall, which is nearest the point of the coffin-bone, receives the first force of the blow, while the frog, which mainly rests upon the elastic heels, a much more yielding substance, receives the weight as the foot settles back to its level. The effect of pressure is to flatten the arches of the commissures and cleft, to widen the frog, throw out the heels, and keep the foot freely expanded.

The elasticity of the step of the horse is the result of a highly compound arrangement—first, the elasticity of the sensitive laminæ; second, the greater elasticity of the sensitive sole; third, the elasticity of the horny wall; fourth, the arch of the sole; and, fifth, the triple spring formed by the foldings of the frog and the manner of its union with the bars.

The movements of the foot are produced by two sets of muscles, *flexors* and *extensors*, similar to the distribution of a single finger in man.

The *flexors* are two in number, and are situated upon the posterior aspect of the leg. In the fore legs these muscles are the *flexor sublimis perforatus*, (Fig. 14, "6,") and the *flexor profundus perforans*, (Fig. 14, "7,") also called in works on farriery *flexor pedis perforatus* and *flexor pedis perforans*; also familiarly designated as the *common* and *deep flexor muscles*. These muscles take their origin in common from the internal protuberance of the humerus, and are united for a considerable distance down the arm, when they separate to form two distinct tendons. Of these, that belonging to the perforatus runs beneath the annular ligament of the carpus, to be inserted into the upper and back part of the lower pastern or coronet bone. Just before reaching

the pastern joint, this tendon divides, to allow the tendon of the perforans to pass through it. Each division where it plays over the joint has in it a sesamoid bone.

The tendon of the *perforans*, lying deeper above, passes between the divided tendon of the first-named muscle, to be inserted into the posterior concavity of the coffin-bone. Attached to this tendon, as it passes over the joint formed by the coronet and coffin-bones, is the navicular bone, considered as a sesamoid bone in this tendon. Two supplementary flexors, the *accessorii*, are described as arising from the posterior and inferior aspect of the ulna and the radius, and uniting below with the two main flexors. These muscles flex the foot upon the leg. As antagonists to these, there are three extensor muscles situated upon the front of the leg, corresponding to the *extensor communis digitorum* and *extensor minimi digiti* of the human arm.

The *extensor communis*, otherwise called in hippotomy *extensor pedis*, arises from the external condyle of the humerus, and from contiguous fascia, and from the upper and lateral part of the radius, and has a strong, fleshy belly, which terminates in a single tendon which passes down over the front of the leg to be inserted into the coronal process of the last phalanx — the coffin-bone. It unites by a slip with the tendon of the next muscle. The *extensor proprius minimi digiti* is represented in the horse by two muscles. One of these, called the *extensor of the pastern*, is inserted by a strong tendon into the side of the first phalanx, the pastern bone. The second muscle, placed between the two preceding muscles, furnishes a strong tendon which passes down in front of the carpus and becomes united with *communis* at an acute angle. The united tendon (Fig. 14, "5") passes behind the coronary border of the hoof to its insertion in the coffin-bone. The office of these muscles is to extend the foot upon the leg. Another muscle, the *abductor longus pollicis*, called in hippotomy the *oblique extensor of the cannon*, by its insertion into the base of the cannon-bone, acts as an extensor of the foot.

A similar arrangement exists in the muscles of the hind leg. The tendon of the *plantaris*, of great strength, has a divided insertion corresponding to that of the *flexor sublimis perforatus* of the fore leg, while the *flexor perforans* sends its single strong tendon between the two divisions of the preceding muscle to be inserted into the terminal phalanx. These flexors of the foot are assisted by the tendon of the *flexor hallucis*, which unites with

Fig.18.



Fig.19.



Fig.20



Fig.21 .



Fig.23.



Fig 22.

Fig. 18. Cannon bone with splint; α the splint.
 Fig. 19. Pastern and coronet, showing ring-bone.
 Fig. 20. Pastern bone, showing commencement of formation of ring-bone.
 Figs. 21, 22, and 23. Spavin.

the tendon of the *perforans*. The extensor tendon of the hind leg, of great strength, is furnished mainly by the *extensor communis* muscle. The *extensor brevis* is represented by a few fibers which come from the cannon-bone, and unite with the tendon of the *communis*. The united tendon passes, as the corresponding one of the fore leg (Fig. 14, "5"), to its insertion in the coffin-bone.

The arteries of the foot are branches of the *radial*, in the fore, and of the *tibial* in the hind legs. The former descends along the radius, accompanied by the radial nerve, to a point a little above the knee, where it divides into the large and small metacarpal arteries. Of these the large metacarpal is the principal trunk, passing under the posterior annular ligament. While passing down the cannon-bone it divides into three branches. The middle one is distributed to surrounding tissues, while the other two become the *plantar arteries*, *internal* and *external*. The plantar arteries of the fore leg result from a division of the *metacarpal*, and in the hind leg from a similar division of the *metatarsal*, and the terminal distribution is alike in both. They descend to the lower part of the cannon-bone, (Fig. 15*, "19" "20," "21,") pass the fetlock joint by the side of the sesamoid bones, in company with veins and nerves of the same names, and pass into the substance of what is sometimes called the fatty frog. They then pass the extremities of the coffin-bone, and enter the foramina on the posterior concavity of the bone. (Fig. 16, *a*, *a*, *a*, *a*.) The branches of the plantar arteries are very numerous, and no part of the body is more fully supplied with blood than the foot. (Fig. 17.)

The veins of the foot constitute a very intricate net-work of vessels. The veins of the frog, the sole and the laminæ, the superficial and deep-seated coronary veins, unite to form coronary and plantar plexuses (Fig. 15, "25"), from which are formed plantar veins (Fig. 15, "22," "23"), which, by their union, con-

*Fig. 15. Dissection of the horse's foot. From Owen: 1, general integument, turned back; 2, fatty mass, forming a cushion behind the great pastern joint; 3, wall of hoof turned back, showing the vertically laminated processes projecting from its inner surface; 4, section of wall of hoof; 5, the articulation between the cannon and pastern bones; 6, 6, aponeurotic tissues; 7, 7, extensor tendon of the foot; 8, 9, 10, flexor tendons of the foot; 11, 12, 13, 14, 15, expansion of the great cartilage of the foot; 16, the coronary band raised from the hoof; 17, the vascular or sensitive hoof; 18, elastic cushion of the heels; 19, 20, 21, plantar artery; 22, 23, plantar veins; 23, part of coronary venous plexus raised from its position; 26, 27, 28, plantar nerves.

stitute metacarpal and metatarsal veins, and lie anterior to, and by the side of, the plantar arteries.

The nerves of the foot are known by names corresponding to those of the blood-vessels which they accompany. The *plantar nerves* (Fig. 15, "26," "27," "28") lie by the side of and behind the corresponding artery, and, as they descend into the foot, are distributed to the same organs and regions. The final branches enter the foramina in the coffin-bone, minutely subdivide in it, pass through its many canals, and escape at the edges of the sole to the sensitive parts of the foot, in company with the terminal twigs of the arteries. (Fig. 17.)

DISEASES OF THE FOOT.

The most practical division of this subject is based upon the structures affected, so that we may have diseases of the bones, of the joints, of the soft tissues, and of the hoof. A large portion of these are inflammations or the results of inflammations.

Original inflammation of the bony tissue is comparatively rare, while that of the periosteal investment of the bone is quite frequent. A variety of causes may account for this. Perhaps the most common is the evil of overwork. Hard driving on a hard road, as on a plank road, on the frozen ground, or on the ice, or the strain of draught at too heavy a load, may excite periosteal inflammation, and from this as a commencement we may have splint, spavin, ring-bone, nodes, etc.

Splint (Fig. 18) is a bony tumor at some point about the cannon and splint bones. The *knee-joint* is termed at its inferior part, between the lower row of carpal bones and the cannon and splint bones, the two latter forming a considerable portion of the joint. As the leg is flexed these bones slide upon the cannon-bone, contributing to the elasticity of the step. When the motion is violent and long-continued, especially with striking upon a hard surface, irritation first and inflammation afterward, may be produced in the periosteal membrane covering these bones. Bony matter is thrown out in the immediate vicinity of their adjacent surfaces, and the result is a sealing together of the bones and the formation of a bony tumor. Unfortunately, the condition is frequently overlooked, until the change is complete and the disease beyond a remedy; for when the bony union is thoroughly consolidated, it cannot be remedied. For a time,



Fig. 24



Fig. 25

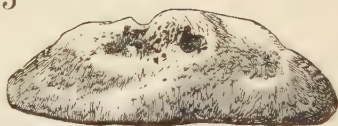
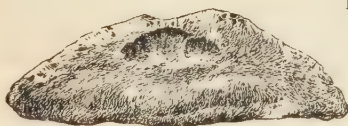


Fig. 26

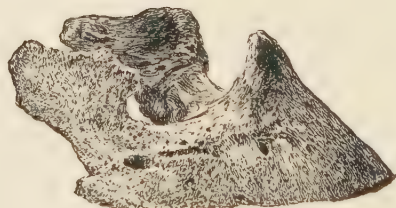


Fig. 24. Spavin, the lower tarsal bones cemented by bony deposit.

Fig. 25. Navicular disease; ulceration of the bone.

Fig. 26. Coffin bone, side view, showing ossification of the lateral cartilages.

while the deposit is fresh callus, and the circulation active, measures to abate the inflammation and to excite the absorption of the deposit may restore the integrity of the part.

Ringbone. (Figs. 19 and 20.) In the pathology of the disease, splint and ringbone are the same. They have the same causes, and are preceded by the same stages of morbid action; but, from the relation of parts, ringbone, at its forming stage, gives rise to earlier and greater lameness. Attention is earlier called to the disease, and treatment is usually sooner applied. Splint may go on to its final stage of bony consolidation without giving rise to much lameness, and without attracting attention to the diseased part, which may escape observation unless the hand is passed over the small tumor; but in ringbone usually the lameness appears with the inflammation, and the earliest effusion over the region calls attention to the seat of the disease.

Spavin. (Figs. 21, 22, 23, and 24.) When it consists in the deposit of bony matter about the hock joint, and the consequent cementing together of the tarsal bones, or the destruction of the tarso-metatarsal joint, is a similar disease, having essentially the same causes. This form of disease may exist in every degree, from a slight exostosis near the joint to such an amount as will entirely destroy the joint, and so invade the soft tissues that the slightest movement is productive of great suffering.

Treatment. Cure or alleviation is possible only in the first stages of the disease, so that on the occurrence of lameness for which the cause is not obvious, careful search should be made in the localities in which splint, ring-bone, or spavin may occur. Tenderness and perhaps swelling may be detected by careful examination. The first requisite is *rest*. Bathing with warm water should be promptly and perseveringly resorted to. The foot should be put into a bucket of warm water, which should be applied with a sponge to the locality of inflammation. Should there be pain, as shown by general uneasiness and constant movement of the limb, a poultice should be applied, moistened freely with a mixture composed of equal parts of the tinctures of aconite root, opium and belladonna. The application of a mixture of one part chloroform and two parts sweet oil may act as a revulsive. Later, when the pain has subsided, the tenderness somewhat abated, and only swelling remains, an ointment of one part of the iodide of lead with eight parts of lard will be found useful in removing the swelling and remaining engorgements of the parts. When put

again to use, the animal should be at first gently exercised and brought gradually to his work.

The abuse in driving, which gives rise to periostitis and the deposition of bone about the joints, may result also in ulceration of the cartilages and bones entering into the composition of the joints. The parts most usually affected are the knee, the hock, and the joints of the navicular bone, with the coronet or coffin-bone. The commencement of the disease is an inflammation of the synovial membrane which lines the bony surfaces between which the motion of the joints occurs. Prolonged lameness follows. Perfect rest at this time with proper treatment may remove the condition, but by neglect and continued use the disease is readily carried to its advanced stages. The inflammation extends to the cartilages covering the joint surfaces of the bones. The vitality of this tissue is so low that it readily breaks down under the inflammatory action, and is removed by the ulcerative process. From this condition perfect recovery is impossible. The best result possible is the formation of a blind spavin, by the cementing of two opposite surfaces of bone by an intermediate bony deposit. Instead of this, the ulcerative process may extend to the bony tissue itself. In Fig. 25 may be seen this ulcerative disease as it invades the navicular bone.

That disease of the *navicular bone* may and does exist is undoubted, as witness the two diseased bones in Fig. 25, but that it is one-tenth part as frequent as some claim admits of great doubt. Navicular disease, like "*shoulder lameness*," has been made to answer all obscure causes of lameness. Except as a constitutional disease, it can only occur, under any ordinary circumstances, in a wide-spread and flat foot. In ordinary forms of the coffin-bone it is raised so high above injury that one can hardly conceive it to happen from this cause alone. The only condition from which it can ordinarily arise is inflammation of the synovial membrane. This *may* be excited by a bruise, communicated through the sensitive sole and frog, and also the tendon of the perforans. It more frequently occurs, however, as the result of violent and long-continued movement, as in fast driving over long distances; and even in this case there probably exists a constitutional disposition to disease. The disease is one fruit of inflammation of a low grade, terminating in ulceration of the cartilage, and finally of the bone. It in no way differs from ulceration of the bones in other joints except in its termination. Being

on the under surface of the bone on which moves the tendon, it cannot recover by becoming cemented to a fellow-bone; so that it is doubtful whether navicular disease, when it has proceeded to the extent of ulceration of the bone, ever recovers. Treatment in the earlier stages, by rest, by foot-baths, by tonic and alterative medicines, and by good, nutritious food, may arrest the disease and restore health to the part.

There is another form of disease which is produced by the irritation of hard driving upon a hard road bed, or by the constant strain of moving heavy loads, and especially in heavy horses. I refer to the ossification of the cartilages of the feet. (Fig. 26.) During the transformation from cartilage to bone, any unusual exercise may produce some degree of lameness. Fullness, heat, and a doughiness of the part may be detected by careful manipulation. Later, in place of the soft, elastic feeling of the healthy foot, we find the solidity of bone. As the change becomes complete, there is but little direct lameness, but the part becomes stiff. The animal is unfitted for the saddle and rapid driving, but may still be useful for draught. Before the bone is fully formed, and especially during the earlier stage of inflammation, the trouble may sometimes be prevented. The measures to be adopted are similar to those previously mentioned—rest, abundant warm water bathing in the earlier stages; stimulating friction, and the use of the iodide of lead ointment in the later stages.

Of the affections of the soft tissues, perhaps the most common, is *laminitis*. This term applies to inflammation not only of the laminae but of the entire fleshy portion of the foot. It is not always the most readily detected, and in some of its more common and milder forms it entirely escapes notice. The lameness is assigned to the shoulder or some other locality; but when we refer to the position of this tissue, between a dense bone and a dense unyielding horny envelope, and to its use to suspend the bone and consequent entire weight of the animal from the wall, and consider that it suffers some degree of pressure at every step, we can understand how the slightest morbid condition of the part, the congestion of its vessels, or irritation of its nerves may—nay, must—give rise to pain and consequent lameness. Fortunately, in practice this is much less frequent than, theoretically, we might expect it to be. Any horse that has been driven for several hours upon a hard, or stony, or hot and sandy road would seem to be fairly fitted for some degree of congestion of the soft

tissues of the feet. At the close of such exertion he is stabled perhaps upon a damp floor, or where a draught of air may blow upon him. No thought is given to the condition of his feet. He is fed, and perhaps he may have been moderately groomed; but of the entire animal no part has undergone so much exposure or hardship as the feet, and no part really needs so much attention.

Laminitis, or, as it has been called by writers, *fever of the feet*, or "*founder*," may exist in all degrees, from the simple congestion of the part to the most severe and disorganizing inflammation. It is mainly exhibited in the fore feet, being a common disease of the hind feet. This is mainly due to the different kinds and degrees of force used in the action of the fore and hind legs and feet. In movement a much greater amount of weight comes upon the fore legs and feet, the direction of the blow upon the ground is different, and the consequent strain and pressure upon the soft tissues much greater.

If acute laminitis is present in one or both fore feet, it is manifested by the very obvious efforts of the animal to relieve itself from pressure. If one foot only is suffering, this is put forward and is so rested upon the heel that not only is pressure taken off, but the parts are relaxed to a still greater extent by the weight of the limb. At the same time, the foot is kept in continual motion, indicating extreme pain. There is heat in the hoof, and especially in the coronary band around its summit. There may also be tenderness in this tissue on pressure. If both fore feet are affected, the animal endeavors as far as possible, by settling back over the hind feet, to take off the pressure from them. This attempt may also be shown by the continuous change from one foot to the other. In severe forms of the acute disease the entire system will sympathize with the local disease. The arteries supplying the part or parts will be found throbbing; the general arterial circulation will be quickened; the pulse will become considerably accelerated, and the constitutional condition will be one of symptomatic fever.

The disease if unchecked may go on to the destruction of the soft tissues of the foot. Cases are on record in which the entire hoof has been shed by the separation of the soft from the horny foot. This is a rare termination, but the formation of an abscess and partial separation is not so uncommon. Before this result occurs, however, the disease has usually passed into the chronic form. Prompt resort to appropriate treatment may result in restoration to health.

By no means advocating indiscriminate blood-letting, we would in this case recommend the free local abstraction of blood, either from the toe of the afflicted foot, or from the plantar vein. If the case is a very severe one, a branch of the plantar artery of one side may be divided. The foot should be placed in a large bucket of warm water, and allowed to bleed in it. Care should be taken to keep up the temperature by frequent additions of hot water. When the foot is removed, it may be placed in a large poultice, having previously been drenched about the coronary border with a liniment composed of two ounces each of the tincture of aconite root, belladonna, and opium, with six ounces of soap liniment.

For the constitutional disturbance, the tincture of aconite root, fifteen to twenty drops in water, may be administered every hour or half hour until a decided impression is made upon the frequency and hardness of the pulse.* Later, saline medicines, such as the nitrate of potash, will aid in preventing secondary affections.

Laminitis may have a variety of terminations. First, it may terminate in a complete disappearance of all the symptoms, that is, by resolution, and there be a complete recovery. Second, it may pass into a chronic condition in which all the symptoms are of a mitigated character. When quiet, the pain is slight, and the heat is little, if any, in excess of the natural state. If the animal is allowed rest upon a soft floor, or is turned to run in a paddock, the lameness may be scarcely obvious; but attempt to drive him, and, either while on the road or afterward, he becomes very lame again. This condition may continue almost indefinitely. Third, the inflammation may terminate in suppuration, which may be confined to a small region of the foot, and eventuate in a partial recovery, or it may be general and so extensive as to destroy the connection of the hoof with the soft tissues. Under the latter circumstances the hoof may be lost. When the destructive suppuration falls short of producing complete separation, it may be sufficient to permit of a change of relation of the coffin-bone to the hoof. A portion of the anterior attachments may be destroyed so that the bone may fall away from the horn. In a flat and weak foot this may cause a bulging of the sole, producing what is called the *pumice foot*. If the hoof is preserved, the space produced by

*Half a drachm of belladonna with fifteen grains of digitalis may be given every half hour, or in emergency the following draught may be given every hour until the proper impression is made on the system: Tinct. aconite root and tinct. belladonna, fifteen drops each, and sulphuric ether and laudanum half an ounce each.

the falling of the coffin-bone is filled by fleshy granulations. The foot, however, suffers permanently, and lameness is constantly present.

Such is the structure of the foot, that even when the damage is less than that just described, the suppuration continues and burrows in various directions, seeking an outlet. Except when the inflammation and suppuration are confined to a limited space in the sole of the foot, the discharge must escape from the crown. At some part of the coronal border of the hoof, swelling is perceived, which either opens of itself or is opened by the knife, which is preferable. When suppuration has commenced, the animal should receive better and more nutritious food, while stimulating injections to the opening may be useful. Should the sinuses become chronic, it has been recommended to trace their number and direction with a delicate probe, and then freely lay them open. To do this, the hoof must be softened by soaking in warm alkaline water, when it may be cut easily.

Limited suppuration of the soft tissues of the foot may occur from a variety of other causes, such as a wound made by the shoe of one foot in the coronet of the other, or by the prick of a nail driven into the quick or so near it as to cause inflammation by pressure, or by a bruise made by the heel of the coffin-bone, to which the term *corn* is applied. In all these cases suppuration may follow inflammation, and the severity and extent of the trouble will depend upon the locality of the injury, and the distance the product of suppuration has to travel to reach a point of exit.

A fourth termination may be designated — that by *metastasis*. The inflammation being situated in the fibrous tissues of the foot is liable to leave that locality and to seize upon similar tissues elsewhere, and under unfavorable circumstances we may have resulting inflammation of the brain or pleura, or indeed of any of the fibrous tissues. A fifth termination may be in mortification, the result of which would be almost certainly fatal at an early period.

Laminitis may be *sub-acute* from its commencement. It is apt to take this form in old horses that have been subjected for a long time to hard work. Its approach is gradual, pain at first small, and lameness slight and not constant. The foot should be given the same treatment as in the more acute form. The warm bath should be used freely. Bleeding would probably be injurious, and

any debilitating medicines must be withheld. The bowels may be loosened by fresh vegetable food, such as potatoes or carrots, and if pain is present, one or two draughts in the day, containing an ounce of sulphuric ether and a drachm of laudanum may be given. Plenty of good, nutritious food should be given. The horse should not be used on the road until all the symptoms have been absent for several days. He may be gently exercised on a soft sward as soon as the inflammation is subdued.

A permanent, incurable lameness often results from the continued use of a horse suffering from some degree of inflammation of the soft tissues of the foot. Whenever this condition is detected, the animal should be given rest, and subjected to treatment with a view to the *cure* of the disease.

We have spoken of a limited suppuration with sinuses between the hoof and the coffin-bone as the result of injury to the coronet, the prick of a nail, or a bruise, which form an abscess at the crown of the foot. To certain abscesses in this region, resulting from an ulceration of the deeper-seated cartilages, the term *quittor* has been applied. The local condition on which this disease depends differs widely from that causing a similar discharge in a healthy foot by direct injury. *Quittor* is a deep-seated lesion of the foot seated in the cartilages, or perhaps even in the coffin-bone itself. It may follow the inflammation of injury, or it may originate in constitutional conditions. Neglected corns, increasing by continued bruising, may cause by pressure the ulceration and mortification of the cartilage, or even of the bone. Fracture of some part of the coffin-bone may eventuate in this disease. It rarely gets well without assistance. When it is diagnosticated, a well-informed veterinary surgeon should be called. The treatment is mainly by local injections, aiding nature to discharge the product of ulceration and stimulating to healthy granulations. Of course the animal is utterly unfit for use.

We have spoken of *corns*. These make their appearance in two forms, the *true* and the *false*. The locality of the true corn is the angle caused by the inflection of the bars, and is between the bars and wall. In this space the posterior extremities of the coffin-bone move freely in the movements of the foot. By the irritation of frequent, prolonged and severe use a thickening of the laminae is produced. This hardens and ultimately becomes a semi-corneous tumor. It may remain in this condition, or it may

become a smooth, dense horn, more dense than any part of the hoof. It is a constant source of pain and consequent lameness.

The more common *false corn* is a bruise of the sensitive sole which lies directly under the heel of the coffin-bone. This occurs most frequently in feet having a flat, level sole, deficient in the arch. It may occur in any variety of foot which is kept badly shod. A shoe with a broad web level upon its foot surface, and seated for its whole width upon the wall and sole, will aid in the production of this form of disease. Several varieties of the false corn are described, but they are simply different stages of the same disease. The *true corn* is essentially incurable. For the *false*, in its early stages the general principles of treatment to abate local inflammation may arrest the disease. If suppuration can be prevented, the duration of lameness will be much limited. Care should be taken that the shoe should have its bearing only on the solar border of the wall, and a very slight portion of the outer border of the sole. To this end, a shoe should be used with a narrow web, but little over half an inch in width; or the shoe with a wider web should be seated so that its bearing-surface would be narrow. Supposing the case has been neglected and suppuration has occurred, the pain and lameness will be great until the matter is evacuated. The sole must be carefully pared away until the horn is very thin, when an opening must be made through it, and the pus evacuated. If great pain is inflicted by the attempt, the foot should be soaked in a warm alkaline bath, by which the horn will be softened, and the extreme tenderness abated. If possible, the foot should be kept in a poultice for a day or two, or three, according to the previous severity of the disease. After that the shoe may be reapplied, care being taken that the opening through the horn be so protected that no dirt or gravel can enter.

A condition similar to false corn may exhibit itself in any portion of the ground surface of the foot as the result of a severe stone-bruise. If detected early, the warm foot-bath, with rest, will be sufficient treatment for it.

One of the most common of the diseases of the foot bears the popular name of *thrush*. Of its exact nature and locality perhaps no two hippopathologists agree. Mayhew, Youatt, Spooner, and others characterize the disease by one of its symptoms, and speak of it as "an offensive discharge from the cleft of the frog," to which is sometimes added "with disorganization of the horn."

Both these are symptoms of the real disease, which is a low form of inflammation in the soft tissues of the sensitive frog. It exists in feet that have been allowed to stand in damp, ill-cleaned stalls, where they are continually covered with wet manure. Running in a wet yard predisposes to it. Gamgee describes *thrush* as "a diseased condition of the villous membrane covering the frog," and says that it is, in its usual form, produced by filth and neglect.

The true seat of the disease is, we believe, in the superficial and less fibrous tissues of the sensitive frog. It is doubtful if true inflammation is present. Pain is usually present in inflamed tissues, and thrush is to a remarkable degree a painless disease. One of the properties of the sensitive frog is to secrete the tissue that becomes the horny frog. Now if, by reason of local or constitutional debility, the secretive action of the part is imperfect; if the secreted matter, lacking vitality, instead of producing horn breaks down into pus, or pus mingled with half-formed and decomposing horn; we should get just the condition we have in thrush.

In the healthy frog the cleft is so perfectly covered over by an arch of horn that fluid could escape only through an artificial opening; but in this diseased condition, the horn is both in so imperfect a state from defect in its original secretion, and so disintegrated by the direct influence upon it of the diseased secretion, that the offensive pus escapes freely from it.

It has been claimed that contracted feet, and too great and long-continued paring of the frog, are the main causes of this disease. They undoubtedly predispose to it, as they contribute, by change of the form of the foot, to effect a change in the nutrition of the organ. But thrush is seen, perhaps, in a well-spread, open foot as frequently as in a contracted one. Constitutional condition has much to do with the local manifestation. An animal poorly nourished and cared for, other things being equal, will be more likely to exhibit the disease.

Any treatment that loses sight of the constitutional condition will fail to do its best work. First of all, the horse should be placed in a stall having a dry floor, or on a short and dry sward, covering a warm, sandy soil. Then he should have thoroughly nutritious diet, and, if the disease has been of long standing, alterative and tonic medicines may be given. Red bark, sulphuret of antimony, and niter, in the proportion of two parts of

the first to one part each of the last two; or a ball, consisting of a quarter of a grain of strychnine, half a drachm of iodide of iron, half a scruple of extract of belladonna, and extract of gentian and powdered quassia sufficient to make it, may be given night and morning. The foot should be put into a bath of warm water and thoroughly cleansed; all dust and pus should be carefully removed from the commissures, and the part dried by the use of dry tow. Then into the crevices should be poured, once a day, a little of a solution of the chloride of zinc, (three grains to the ounce of water). The foot is to be kept shod with calkins, so that a free space may be left under the foot for the circulation of the air. Cases will yield more readily to simply constitutional than to simply local treatment. A judicious combination of the two will have the happiest results.

The condition of *thrush* neglected may pass into that of *canker*. *Canker of the foot* may be an original disease in low-bred, ill-conditioned horses, exposed in wet or filthy stables or yards, and poorly cared for. It more frequently, however, follows thrush which has been neglected. It commences in the same tissues, rapidly extending from the frog to the sole and the laminated structures. The disease consists in destructive inflammation, with ulceration, which destroys the connection between the sensitive and horny sole and frog. After a time a foul fungus sprouts from the ulcerations, accompanied with exceedingly disagreeable discharge. The horn of the sole and frog becomes disorganized, and breaks down. The fungoid granulations, with the constitutional depravity which predisposes to them, constitute the disease.

The treatment consists in the removal, by the knife, of all the detached horn, together with as much of the fungoid tissue as can be removed without the loss of too much blood, and the application of astringents and mild caustics, so applied as to remove the remaining fungus, and to change the action of the part. Constitutional treatment, tonics, and alteratives, with good care and nutritious food, will do much in causing a successful issue.

It is believed that much of the obscure lameness to which horses somewhat advanced in years, and especially those that have had much severe driving and work, are subjected, is *rheumatic*. From the nature of the tissue composing the sensitive foot, so largely fibrous as it is, we might anticipate that from long-continued hard usage there would arise a degree of irritability in

that tissue that would cause lameness. This condition must not be confounded with acute rheumatic fever, to which horses are sometimes subject, and which is a different disease. The disease of which I speak in this connection is an irritability and painful condition of the fibrous tissue, without any of the products or results of the inflammatory action.

The animal should be housed in a dry and airy stable, but sheltered from draughts of air, and should be blanketed. The feet should be treated to a warm bath, and then be rubbed dry, and have an application of Fahnstock's liniment, and be bandaged. At the same time there may be given daily in meal an ounce of acetate of potash, with a scruple of powdered colchicum; or a draught of the following: iodide of potassium, two ounces; liquor potassæ, one quart; of which two tablespoonfuls may be given, night and morning, in a pint of water or mixed with feed.

There are several diseased conditions which manifest themselves in the horny foot. Of these the most important are the flat or convex sole, or the pumice-foot, and the sand-crack. The false quarter is in no very great degree different from the sand-crack. All disease or malformations of the horn must originate in injury or in disease of the soft tissues from which the horn is a secretion.

The pumice-foot, which consists in a falling of the sole to a level with the solar border of the wall, or even so as to constitute a convex surface, is usually preceded and caused either by a destruction of the elastic laminæ attaching the coffin-bone to the horn, or to an elongation of the same, or else to a softening, spreading, and flatening of the entire hoof. Animals with natural flat feet—those that have been bred on marshy land, where their feet have been kept soft, are most liable to exhibit this form. Probably nothing can restore this kind of foot; but care in shoeing may enable the animal to be of some service.

Sand-crack is a fissure in the hoof, which begins at the coronet, the thin edge first breaking away. It is a disease of nutrition, the horn of the foot being secreted in diminished quantity and impaired quality. The break, small at first, is extended until it may divide the entire hoof. It usually occurs in the *quarter*, and perhaps most frequently at the inner quarter. It has been asserted that the whole difficulty is produced by bad shoeing. Low condition, impure state of the blood, and lack of care, are predisposing causes. In this conjuncture, slight injury to the cor-

onset may be followed by such deficient secretion of horn at that place, that the weakened part may give way and sand-crack take place.

If possible, the animal should be given entire freedom from work, and should be turned into a small paddock, or have a loose box, in which he may move somewhat. He should have nutritious food, and sufficient green food or bran mash to keep his bowels free. During the early stages of the disease, and while efforts are being made to restore the soundness of the foot, the horse is better without shoes, as the natural movements of the parts tend to restore their vitality. The bar-shoes, recommended by some writers, are useful only in those cases of long standing which are essentially incurable, and where the horses are to be put to slow work. The part should be interfered with as little as possible; there should be no cutting, paring, or burning; and care should be taken to keep dirt, gravel, etc., from the open sore. The healthy condition of the open and granulating surface should be maintained by frequent washing with soap and water, and the application of the solution of chloride of zinc (three grains to the ounce of water). If the animal is in use, before being taken out the crack should be filled with lint saturated with the solution, which should be confined in place by a strip of cloth completely covered with tar. This should be removed as soon as the horse returns, and the wound be cleansed, if it is at all foul, and carefully dressed again. If treatment is commenced early, a fair degree of expectation of recovery may be entertained; but, in many cases, through neglect or lack of proper treatment, a permanent deficiency of the hoof remains. In such cases, by the use of a bar-shoe, properly adjusted, the animal may be made of some use.

Contraction of the horn of the foot is a frequent cause of lameness. This may occur at some part of the coronary border, or may be in the quarters, or may be confined to the heels; the last being, perhaps, its most frequent locality. Contraction at the coronary border produces lameness mainly by pressure on the extensor tendon. Movement produces irritation and consequent pain, which is shown when the animal is at rest by his putting the foot forward. This position relieves the pressure upon the tendon, and gives partial relief from pain. Contraction at the quarters and heels may not always cause lameness. If the condition comes on very gradually, changes of the contained parts may so accom-

pany it that little if any lameness will be caused simply by the contraction. Again, the contraction may be the consequence of disease, and the other result of a partial cure and a previous lameness lessened. Contraction may result from chronic founder or fever of the feet. It may be produced by long-continued stabling upon a dry, plank floor. Thrushes may so demoralize the floor of the foot as to cause contraction. Too great and constant paring away the bars of the foot may destroy their resistance to the approach of the heels, so the paring of the frog may destroy the function of that organ, as an elastic spring to keep the heels open. The degree of lameness that follows the change of form produced by these causes is not so great as when it results from inflammation of the elastic portions of the foot. The changes are more rapid, and pressure is made upon the sensitive portions of the foot. The horse indicates the amount of pain he suffers by the peculiar short and quick character of his step, and the gentle and light manner in which he places his feet upon the ground. When not in motion, he rests his feet forward, and is continually changing them. Contraction is apt to be seen most frequently in highly-bred horses with a naturally high and narrow foot. This is one of the causes of lameness in which the advice and probably the treatment of an educated veterinary surgeon are important. No definite directions for treatment can be given.

There are several other forms of disease in the foot, but they are either so slight, or so rare, or so little amenable to treatment, that we will not cumber this article with them. In closing, we advise that in all serious or doubtful cases of lameness, an educated veterinary surgeon be called. If such a one is not obtainable, the advice of an educated physician may aid in determining the locality and cause of disease. This known, treat the case according to the suggestions of this article.



PIGEONS. "Spangled Suabians."

THE VALUE OF INSECT-EATING BIRDS.

BY J. W. LANG, OF BROOKS, ME.

"Birds—birds! ye are beautiful things,
With your earth treading feet and your cloud-cleaving wings;
Where shall man wander, and where shall he dwell,
Beautiful birds, that ye come not as well?"

INTRODUCTORY.

Birds are prominently distinguished from other animate objects by many points of grace and beauty, and a peculiar adaptability to useful purposes for which they were designed. Their general form, feathery covering, and the incubating process by which they produce their young from eggs, readily distinguish them from mammalia. Their heads are pointed so as to easily cleave the air; the body expands gradually, and has wings as movable weights to balance it, and as oars to propel it, and it diminishes gradually, fringed with a spreading tail, which serves the double purpose of rudder and brake. The tail also contributes to buoyancy. The large bones are hollow receptacles for air, which acquires the temperature of the living bird, and thus rendered lighter than ordinary, serves the purpose gas does in the balloon. Large sacks for holding air are found in various parts of the body, which, when filled with the heated air help float the bird in its aerial element. The quills and feathers unite the greatest possible degree of lightness and strength.

Birds render to man two important services directly; they furnish him with good palatable food, and they protect his fruits, grains, vegetables, and flowers from insect ravages. This service is great or small in proportion to the number of birds and plentifulness of insects. When we consider, for a moment, the devastation of some of the insects injurious to vegetation, and their great

power of reproduction, we shall get an idea of the use and value of insect-eating birds in some degree. A gentleman addicted to scientific inquiry, has discovered that thirty-three days complete the cycle of the potato bug; that seven hundred are the product of one female, from which the family grows in the second generation to two hundred and thirty-five thousand, and in the third to eighty-five millions seven hundred thousand. The Rose-breasted Grosbeak, a native bird abounding in all the states of the Union, is an effectual destroyer of these pests. Were their numbers sufficiently increased in those sections now overrun by the Colorado beetle, they would soon sweep them from the earth, or at least so nearly so that they would not trouble potato growers.

Birds are divided into orders; and the divisions are made according to the various modes in which the birds are to gain their subsistence. Birds of prey are distinguished by their size, strength, and remarkable length of sight. The Scratchers receive their name from a habit common to many of them, and particularly noticeable in our barn fowls. The Swimming birds have a union of toes by means of a thin, cartilagenous membrane, and are called "web-footed." Their legs are short and are placed more or less behind the point of equilibrium. The Waders are distinguished by length and slenderness of legs which are bare to considerable extent. So on through the various orders. Some distinguishing characteristic has served to group into orders, and slight deviations in each order has arranged them into families.

ORDERS AND FAMILIES OF BIRDS.

		CONIROSTRES (<i>Cone-beaked birds.</i>)
		Corvidæ — Crows.
		Sturnidæ — Starlings.
		Frineillidæ — Finches.
		Buceridæ — Hornbills.
INSESSORES.		Loxiadæ — Crossbills.
	(<i>Perchers.</i>)	DENTIROSTRES (<i>Tooth-billed birds.</i>)
		Laniadæ — Shrikes.
		Merulidæ — Thrushes.
		Sylviadæ — Warblers.
		Ampelidæ — Chatterers.
		Muscilapidæ — Flycatchers.

INSESSORES. (Perchers.)	{	FISSIROSTRES (<i>Cleft-beaked birds.</i>)
		Hirandinidæ — Swallows. Caprimulgidæ — Goat-suckers. Meropedæ — Bee-eaters. Alalayonidæ — Kingfishers. Todidæ — Todies.
RAPTORES. (Birds of prey)	{	TENUIROSTRES (<i>Slender-billed birds.</i>)
		Trochilidæ — Humming birds. Cinnyridæ — Sunbirds. Promeropidæ — Hoopes. Meliphaqidæ — Honey-suckers. Paradisidæ — Birds of Paradise. Certhidæ — Creepers, Nuthatches, etc.
SCANSORES. (Climbers.)	{	Falconidæ — Falcons. Vulturidæ — Vultures. Strigidæ — Owls.
		Picidæ — Woodpeckers. Cuculidæ — Cuckoos. Ramphastidæ — Toucons. Psittacidæ — Parrots.
RASORES. (Scrapers.)	{	Phasianidæ — Pheasants. Crocidæ — Curason birds. Tetraonidæ — Partridges. Columbidæ — Pigeons.
		Struthio — Ostrich. Cassuarius — Cassowary. Dramaius — Emu. Apteryx. Dodo.
CURSORES. (Runners.)	{	Ardeida — Herons. Scalopacidæ — Snipes. Rallidæ — Rails. Charadriadæ — Plovers.
		GEALLATOIRES (Waders.)
NATATOIRES. (Swimmers.)	{	Anatidæ — Ducks. Laridæ — Gulls. Pelicanidæ — Pelicans. Colymbidæ — Divers. Alcidæ — Auks.

TRAITS AND CHARACTERISTICS.

Having presented in tabular form the different orders and families of birds, with technical and common names, it may be well to observe further their characteristics and habits. We begin with the first great order of

INSESSORES (*Perchers.*) This order is the most numerous and varied of the whole class. It embraces those birds which are neither swimmers, waders, climbers, rapacious, or gallinaceous. The feet, as their name denotes, are fitted for grasping or perching. This peculiarity is evinced by the situation of the hinder toe, which is invariably placed on the same plane as the front one. These birds never seize their prey with their feet. Their food is various, but in general mixed, consisting of insects, fruits and grain. Those that have a stout beak feed mostly on grain; those having a slender beak mostly on insects. Their proportional length of wing is as various as their habits. In general the female is smaller than the male, and less brilliant in plumage. They always live in pairs, build their nests in trees, and display great ingenuity in the construction of their nests. This order embraces nearly all song-birds.

The Cone-beaks feed indiscriminately on insects and vegetables; this embraces the families of Crows, Starlings, Finches, Hornbills, and Cross bills. Under the general name of crow are included the Rover, the Carly Crow, the Rook, the Hooded Crow, and the Jackdaw. These birds are especially useful in exterminating the grubs of *Coleoptera*, or Sheath-winged insects. And when we reflect that of this order (Beetles) there are at least one hundred thousand different kinds we shall realize in part the great service this family of birds are rendering. The Magpies are nearly allied to the Crows, and also the Jays. The Nuthatches also belong to this family, and in habit resemble the Woodpeckers, both of which feed largely upon the larvæ and insects which infest trees.

Toothed-billed birds are distinguished by their notched bills, and are the greatest destroyers of insects among the Perchers. With very few exceptions they live entirely on insects, and resort to fruit only when not sufficiently supplied with insect food. Their mouth is protected on each side by bristles which defend the soft parts during the struggles of the insect captured. This Order embraces the Shrikes, Threshers, Warblers, Chatterers and Fly-catchers, and is composed largely of insect-eating birds, though some families composing it feed on frogs, fish, and smaller birds, as well as insects. The common thrush, blackbird, fieldfare redwing, missel thrush, orioles, and dipper are prominent representative birds of the order. The warblers comprise a numerous family of the smallest class of birds. They are useful in keeping down the undue multiplication of innumerable insects of minute

size, which haunt the buds, flowers, and foliage of plants. The small size of these insects causes them to escape the notice of larger insectivorous birds. They are mostly migratory birds, appearing when needed, when spring calls insect life into activity, and disappearing when autumn's cold renders their services no longer needed.

The Fly-catchers are a numerous family, and they rarely partake of fruits being very nearly insectivorous. They feed upon the wing and rarely catch an insect when at rest. They are very dextrous in their movements, and possess great powers of flight. The swifts and swallows belong to this family.

The Humming Bird tribe are partly insect eating. They are swift in their motions and are active about the flower beds and fruit yards. Over one hundred and seventy species have been described; and this family is exclusively confined to the New World, being replaced in the Old by the Sun-Birds.

The numbers, and consequently usefulness, of the Perchers may be greatly increased by attention and protection. Their habits and tastes should be better understood and studied; their enemies among birds of prey and mammalia destroyed or kept in due bounds, and nesting places, cosy and safe, provided. Attention and a little effort in this direction will richly repay. The Perchers are our friends and benefactors.

RAPTORES (*Birds of Prey*). This order contains but few families, and these are detrimental, as a whole, rather than beneficial, to the farmer, for they destroy but few of his insect enemies, while they destroy largely his bird friends, as well as his poultry. We shall pass this order with the single remark, at present, kill all of these rapacious birds possible.

SCANSORES (*Climbers*). This order by peculiar arrangement of toes have great facility in climbing trees and hence their name. Two of their toes being behind and having peculiar formation, greatly impedes progression on the ground. Their nests are in hollows of trees, or holes excavated by themselves in some decayed log or tree. Their flight is moderate, and their food consists of insects and fruits. They are remarkable for strength of beak.

The Woodpeckers are representative of this order. Of these there are several species or kinds, all insectivorous and beneficial.

Sometimes, though, we are alarmed at their "chisel marks" which they make in pursuit of grubs and larvæ, and are tempted to destroy them. But sober second thought gives this bird the vantage ground of a benefactor.

The Cuckoos rarely build nests of their own but lay their eggs in the nests of other birds. They eat insects and fruits. Upon the whole they may be placed in our list of useful birds. They destroy great numbers of caterpillars; sometimes it pursues insects on the wing. The Cuckoo is an unsocial bird in its habits, rarely congregating except for migration.

The other birds of this order, the families of Toulons and Parrots, not being plentiful, or natives of our northern clime, we shall pass unnoticed here.

RASORES (*Scratching Birds*). Embraced in this order we have the Gallinææ, or poultry tribe. These have bulky bodies and formed especially to live upon the land. They are the most easily domesticated, and furnish to men a great amount of savory, palatable food. Their fecundity is great. Their diet is mixed, consisting of insects, fruits, and grain. This order embraces the Pheasants, Fowls and Pigeon families. The number of insects destroyed daily about gardens, fields, and fruit yards, where poultry have access is enormous. Countless flocks of pigeons migrate over the United States annually, and though they sometimes destroy grain in the fields, their bodies as game, and their services destroying noxious insects fully balances the account. If each destroys but ten insects per day, what innumerable numbers do they all destroy and thereby confer great benefit to agriculture and to the world. The Grouse family, Dove family and Quail family belong to this order.

CURSORES (*Running Birds*). This order embraces the Ostriches, Cassowary, Apteryx, and a few other families mostly unknown to us except in works upon ornithology. They are insect eaters, in part, but as they have no local interest to us we shall omit further notice of them.

GRALLATORES (*Wading Birds*) derive their name from their habits and conformation. Their legs raise up their bodies, as it were, upon stilts. They frequent the banks of rivers, margins of lakes, marshy places, and the seashore. They derive their food

chiefly from the water. This order embraces the families of Herons, Snipes and Rails. This order is the least insectivorous of any and though some kinds render service to the former, as a whole they are indifferent.

NATATORES (*Swimmers*). These birds have oar-like feet and boat-shaped bodies, and are easily recognized from the other orders. Their gait is very awkward on the land, but their motions are graceful upon the waters. Their bones are filled with an oily matter. This order embraces the Duck tribe, the Gulls, Pelicans, Divers and Penguins. The first three fly well. The last use their wings more as fins for swimming than as supports for flying. Ducks are very useful in vineyards. They are largely insectivorous, as are also the Goose family. This order is beneficial as destroyers of insects. Our next study will be, more particularly, the specific food of various birds as determined by examination of the contents of their stomachs.

WHAT BIRDS EAT.

Hawks are very injurious to the interests of the farmer, as has been stated before. They destroy his poultry and small insect-eating birds. They also destroy very many mice, and at certain seasons, insects. A sparrow hawk shot in October was filled with grasshoppers. A red shouldered hawk in November contained crickets and grasshoppers.

Owls are nocturnal birds and destroy smaller birds, poultry, rats, mice, rabbits, squirrels, and beetles. They are fond of fish.

Falcons are decidedly injurious, and have hardly one redeeming quality.

Cuckoos feed largely upon hairy caterpillars, rejected by other birds. They pursue their food chiefly in apple orchards. Our cuckoo builds its own nest and rears its own young.

The *Caw-bird*, on the other hand, leaves her eggs in nests of other birds, to be hatched and reared by charity. Both these birds were found to contain beetles, caterpillars, and various other insects infesting trees.

Woodpeckers are very beneficial to the orchardist. The downy woodpecker is often called "sapsucker" from an erroneous notion that they suck or eat the sap of trees, especially that of the apple-tree. An examination of their stomach at different times revealed no trace of bark or sap. One was found filled with black

ants, another with larvæ of beetles extracted from trees and wood. Other kinds of woodpeckers, including all that were natives of our climate, upon examination were found filled with worms, ants, larvæ, beetles and grubs, but no trace of wood or bark was in their stomachs.

Humming birds contained small insects, spiders and larvæ. These minute, busy little birds are very useful in our gardens and orchards.

Chimney swallows, or swifts, are exceedingly useful. They feed upon gnats, mosquitoes and other small insects that are found mostly on the wing. Their stomach presented a pulp of soft-bodied insects. These birds are purely insectivorous, and very beneficial.

Whippoorwill feeds upon night-flying insects such as moths and beetles, and is deserving of care and protection.

The *Night-Hawk* is a nocturnal feeder upon insects. It destroys immense quantities of large beetles, moths and other insects.

The *Kingfisher* feeds principally upon fish. It also eats aquatic insects.

The *King-Bird* has been accused of eating bees, and in many localities is shot as an injurious bird. Examination of the stomachs of several, and some of these shot in close proximity to an apiary, exonerates him from such charges. It may feed upon bees at certain seasons, but that it does it to any great extent we are not convinced. This bird drives away hawks that venture too near his place of resort, and very often thus protects the farmer's poultry. It attacks its enemy with great tact and vigor and always victoriously.

Crested Fly-Catcher contained beetles and hymenopterous insects. *Pewee Fly-Catcher* contained soft-bodied insects and is often found filled with striped squash bugs. It feeds largely upon Aphodii, and small insects. Flies of all sorts are destroyed by this bird in great numbers.

Thrushes. Among this family the best known and remarkable is the *Red-breasted Robin*. This bird at times devours much small fruit, but we can willingly forgive this when we consider its great value as an insect-destroyer. Many of our crops are protected and in some instances saved, by the operations of this bird among insects and their larvæ. One, shot in March, contained spiders and other noxious insects. Another, killed in April in a

plowed field, contained full-grown larvæ of cicada. The farmer who destroys a robin because found upon his cherry or plum trees, and thinks he has done himself a kindness and mankind a service, should reflect. Let him open the stomach of the bird and he will find it full of worms and insects. In some instances from one hundred to two hundred grubs will be found in a single bird! Surely he is "penny wise and pound foolish."

The *Hermit-thrush* feeds upon small seeds early in the season, but later upon insects entirely. Many species of insects fall prey to this industrious little fellow.

The *Bluebird* with us replaces the English robin of old England, but as an insect-destroyer excels that famous bird. Its food consists of all kinds of insects and their larvæ, especially canker-worms, coddling moths and caterpillars of every description. The birds arrive with us early enough to destroy the female moth as she ascends the fruit tree to deposit her eggs. Orchardists, of all men, should by all means in their power preserve and protect and propagate this beneficial family of birds. The farmer and agriculturist are also under special obligation to this useful bird. They destroy myriads of larvæ that would, otherwise, increase and multiply to great injury to vegetation. One, shot in April, contained grasshoppers, and this before they had been observable in the same field. Another contained cutworms and a third small beetles and other insects and wild seeds. Boxes put in trees and about buildings will attract this bird to breed in them. They should be protected in such situations, and if troubled by wrens, protected from their encroachments. Thus provided for they become almost domesticated.

A *Titlark* in April contained a half-grown grasshopper and other injurious insects. These birds are gregarious and very useful.

The *Maryland Warbler*, or yellow throat, frequents sandy soils and feeds principally on insects. One shot in September contained nothing but fragments of insects. The warblers are all insectivorous and among our most useful birds. They destroy very many minute insects, and these are oftentimes more detrimental than the larger species. The *Yellow Rumped Warbler* feeds principally on two-winged flies. *Black Winged Red Bird* contained, in May, grasshoppers, beetles and flies. Another contained wasps, hornets, flies and larvæ.

Swallows and *Martins* are very active and keep down the rapid increase of many destructive and annoying insects. Small flies, moths, gnats, mosquitoes, and beetles fall prey to these swift winged birds. They prefer nesting places near habitations of men, and when protected increase rapidly, with profit to the farmer who provides for them.

The *Cedar* or *Cherry Bird* is destructive to small fruits. They often prove great annoyances in this way and often provoke their fate. But in autumn they feed upon insects and also in spring, and it is but fair they should have part of the fruits they protect. Small caterpillars, beetles, and canker-worms are destroyed by them in great numbers. They eat seeds of the cedar, and berries of various kinds.

The *Butcher Bird* feeds upon insects, especially grasshoppers and crickets. They have a habit of impaling their prey on thorns and leaving it till wanted for food, preferring to have it tainted before eating.

The *Cat Bird* has nearly the same habits as the Mocking Bird. It destroys immense numbers of caterpillars, worms, and insects in general. It will, at times, eat small fruits.

The *Nuthatchers* are largely insectivorous. They, in common with small Woodpeckers, are often called "sap suckers," and this is incorrect. They are useful in extracting larvæ from the bark of trees; they protect not only our fruit trees but forest trees as well. One shot in April was filled with larvæ of *Rhogium Linealum*, which lives under pine bark, and other noxious insects and their larvæ.

The *Chicadee* destroys the eggs and minute larvæ in the same manner as the Crested Wren. One shot in January was full of small larvæ and insects which live or hibernate in crevices of the bark of trees.

The *Finches* are largely insectivorous, and useful in destroying many kinds of insects. They also eat juicy berries and seeds.

The *Yellow Bird* or Goldfinch lives partly on small seeds and partly on insects, among which are noticeable the wheat midge.

The *Sparrows* are very useful birds and among the most plentiful. They are found with us the year round, some species migrating and others taking their places. The Snow Bird belongs to this family and remains all winter, subsisting on wild seeds and hibernating insects. A house sparrow's nest, in the

city of Paris, was found to contain seven hundred pairs of the upper wings of cockchafers, though other food was procurable in abundance.

The *Ground Robin* frequents low grounds near the water, and feeds largely upon *culicidæ*. It also feeds upon worms, larvæ, and other insects, as well as seeds. One shot in July contained weed seeds and various insects.

Bobolink, or *skunk blackbird*, known as reed bird in the middle states and rice bird in the southern, feeds to a considerable extent upon insects. This is a very common bird in New England, and its shrill, rattling notes of song are familiar to every one. They eat the seeds of dock, dandelion and grasses. Those examined contained seeds, grasshoppers and canker worms and various small insects.

The *Meadow Lark* destroys numerous kinds of worms, grubs, insects, and their larvæ in cultivated grounds. This bird is sometimes called the American Starling. One killed in April contained beetles, and other insects, with gravel. This bird seldom molests fruit, and may be classed as a decidedly useful bird.

The *Blackbird* family are all more or less beneficial. Some injure corn and grain, both in spring and autumn, but seldom extensively. An examination of the stomachs of these birds at different seasons, induces the belief that they should be classed with benefactors, rather than injurious to our agricultural interests. Larvæ, caterpillars, beetles and worms are destroyed by them in great quantities.

The *Orioles* are among the most beneficial birds we have. An Oriole shot in a field of wheat had eight hundred weevils in its crop. A pair of parent orioles destroy at least one thousand caterpillars every day. They are industrious, energetic birds and drive a profitable business in the insect line.

Crows are a much abused bird. It is true they sometimes prove annoying and destructive, and this is very apt to blind us in regard to their good qualities. We are apt to set them down guilty of many things because they offend in a few, and those few hills of corn or potatoes destroyed by them overtops and excludes all benefits they do, and prejudices us against them once for all. They are great scavengers, and thus are health promoters; they destroy multitudes of grasshoppers, crickets, ants and worms; they render great service by their destruction of noxious insects,

and on the whole may be considered beneficial rather than detrimental.

The *Blue Jay* eats nuts, grains, berries, fruits and eggs and young of other birds. It is partially insectivorous, destroying many insects and caterpillars. We can hardly class this bird among those that are beneficial.

Pigeons, Turkeys, Grouse, Quails, Fowls, are more or less beneficial. This list embraces many game birds, the most useful as an insect destroyer, perhaps, is the American Quail or Partridge. One shot in a cornfield in Ohio had in its crop cut-worms, vine bugs, and chinchies, but not one kernel of corn. This goes to prove it largely the farmer's friend.

The *Cranes, Herons, Bitterns, Plover, Woodcock*, and *Snipe* are all beneficial to the agriculturist, for they destroy reptiles, slugs, insects and worms, while they do not destroy any of his crops.

Ducks, Geese, Swans, etc., are also beneficial as insect destroyers. Ducks are especially beneficial in vineyards, destroying vermin that infest the vines. They also render good service in gardens and fields.

Florent Prevost, who collected, examined and observed the contents of the stomachs of European birds, watched their habits, and minutely experimented for several years, comes to the conclusion from his researches: "Birds are in general far more useful than hurtful to the agriculturist, and that the mischief done at certain periods by the granivorous species is largely compensated by the destruction of insects they effect at other periods." The commissioners appointed by the French government reported with an accuracy characteristic of French legislation: "By no means, save that of little birds, can the ravages of insects be kept down. A certain insect was found to lay two thousand eggs, but a titmouse was found to eat two hundred thousand of those eggs in a year." Destroy all insect eating birds and our fair earth will speedily become a wilderness, a waste, a desert.

PROPER BALANCE NECESSARY.

The farmer has more for his realm than the soil. The rain of heaven is his helper, and the sunshine his servant. Insects and creeping things do something to make and to mar his fortune. He has domain over the birds of the air; they cheer his labor with their songs, reduce the excess of insect life that by its prevalence

would destroy the products of his fields and his flocks. He cannot safely ignore or exclude their proffered service, and should not grudge the few grains and fruits that serve as deserts to their insect meats. The birds give much and take little. Man accepts their large service and refuses the small reward, adding injury to denial, and murder to baseness.

The soul of man is to be fed as well as his stomach. Birds are clothed in softer apparel than cashmere, and richer than the dyer's brilliant hues. Their voices are attuned to sweetest melody, and their movements are the poetry of motion. Man is to earn his bread by the sweat of his brow, but, unlike the criminal, solitary and alone, he is to be cheered by the song of bird and hum of bee. The soul is lifted up and purified by the sweet tones of melody, and the birds are Nature's musicians. With genial spring and balmy airs, gushing sunshine and welling bird song, the soul expands and drinks in the harmonies of the universe. We are lifted out of trivial things and borne on to new duties with manly heart and strong right arm.

Birds are valuable to us as teachers. No less wonderfully made than man himself, these airy creatures teach us many valuable lessons. Swift of flight, graceful in movement, ethereal in music, sharp of sight and acute of smell, how clumsy and weak is man in comparison. They are teachers of cleanliness and tidiness. Their nests show wisdom of construction, and adaptability of purpose. In affection and constancy they are models for our imitation.

The disturbance of the proper balance between the feathered tribes and insects, is attended with serious difficulties to man, affecting his food, health and life. The weakening of a single link in the chain of being is productive of dire results. The reproductive energy of Nature is enormous. Man by his artificial habits disturbs this harmonious law of production. As a rule the most worthless things are the most productive. Birds produce but few young, are liable to many enemies, and therefore increase but slowly. Insects multiply rapidly. The *Aphides*, or plant lice, are found everywhere, and upon almost every plant. Some plants are subject to several species. They are produced alive, not hatched from eggs, except the last generation in the season and the progeny are all females. They come to maturity in a week, closing the season with as many generations as weeks of

hot weather. Reaumer has proved that one individual in five generations may become the progenitor of six thousand millions. The tobacco worm has immense power of reproduction. A bark louse, infesting the cactus, which becomes the cochineal of commerce when dried, are so small that 70,000 insects are required to make a pound. England alone consumes 150,000 pounds, or 10,500,000,000 specimens of this insect (*coccus cacti*). Thus an idea may be formed of their powers of reproduction.

Locusts at times overrun whole countries. In France, boys are employed to destroy their eggs. Each boy often secures fifteen pounds of these. A farmer in New Hampshire caught upon a net made of two sheets, in one night, five and three-fourths bushels of grasshoppers. The year 1871 will ever be remembered in Maine as the "great grasshopper year." The advent of the cabbage worm recently in great numbers, of the tree caterpillar a few years past, of the canker worm, and many others, are of too recent occurrence to be forgotten or admit of discussion. Their predominance was favored by circumstances, among which was an undue scarcity of insect-destroying birds. The proper equilibrium was not maintained, and hence the result. So it has been, so it will be. Destroy the birds, and we foster, consequently, these destructive insect pests. Protect the birds and we diminish insects.

UTILITY OF BIRDS.

It is apparent that an equilibrium must be maintained. We have shown, in some degree, the value of birds in this connection. We shall endeavor to show further their great utility in maintaining this equilibrium. Says a well-known writer: "It is not unusual to behold in American seas immense troops of birds collected to prey upon those prodigious swarms of insects which sometimes darken the air." Swallows feed upon flies, grasshoppers, and beetles. I have often observed them skimming about mowers in the field, picking up every small insect driven up by the operations of the scythe. They also consume many of the smaller butterflies. Belon says: "A swift swallow can see a fly six hundred yards distant." Bradley says: "A pair of sparrows will destroy three thousand three hundred and sixty caterpillars for a week's family supplies." The fly-catchers do not lie in wait for their prey, but hunt it untiringly. They follow the plow,

glean the flies found molesting the cattle, and banquet upon swarms that breed upon the margin of stagnant water. Wilson says: "A blackbird will destroy fifty grubs daily; even in winter its food is, in part, chrysalides and spiders." A curious observer, watching the nest of a thrush, counted two hundred and six visits to feed the young during the day. The partridge often feasts her brood upon an ant hill. A family of plovers will destroy myriads of grasshoppers, taking them in an early stage of their existence. Woodpeckers are constantly seeking insects, and laboriously seeking to extricate them from the bark and wood of trees. Wrens and tom-tits and creepers busily employ themselves in trees and other places, seeking their favorite food. Jays, crows, night-hawks, and whippoorwills, destroy a great number of beetles. The robin and red-winged blackbird obtain their food exclusively from the ground most of the year, consisting of worms, grubs, caterpillars, and beetles. A golden robin destroyed over a thousand caterpillars daily, eating only the insides of each. A family of jays with five young require twenty thousand insects for every one hundred days. Bradley says, "That five hundred caterpillars were consumed by one nest of birds in one day." Finches and sparrows feed their young entirely on the larvæ of insects. All granivorous birds feed on insects in early life. Birds have peculiar adaptation as aid to the farmer and gardener. The co-operation of the birds with the agriculturist is almost uninterrupted, winter and summer.

CONCLUSION.

Imperfectly as we have outlined this great subject, indefinitely as we have presented it, and unsatisfactorily as we have worked out details, we cannot but believe that the value of birds to the husbandman, to the citizen, and to the whole country, has been seen, and will in a degree, be appreciated. Who of us, rational and intelligent beings, looking over the fearful insect depredations of our own, and by the aid of history of past ages, and then at the vast service birds render in preventing and withstanding them, can fail to be impressed of their necessity and their value? Who so blind, wilful and ignorant, to dispute it?

The following communication by Professor Treadwell of Cambridge, Mass., to the Boston Society of Natural History, giving a detailed account of the feeding and growth of the American

Robin, contains much that is highly suggestive to those who regard birds as a cost and a nuisance :

“When caught the two birds experimented on were quite young, their tail feathers being less than an inch long, and the weight of each about twenty-five pennyweights less than half the weight of the full grown bird; both were plump and vigorous, and had evidently been very recently turned out of the nest. He began feeding them with earthworms, giving three to each bird that night; the second day he gave them ten worms each, which they ate ravenously; thinking this beyond what their parents would naturally supply them with, he limited them to this allowance. On the third day he gave them eight worms each, in the forenoon; but in the afternoon he found one becoming feeble, and it soon lost its strength, refused food, and died. On opening it he found the crop, gizzard and intestines entirely empty, and concluded, therefore, that it had died from want of sufficient food, the effect of hunger being perhaps increased by cold, as the thermometer was about 60°. The other bird, still vigorous, he put in a warmer place, and increased its food, giving it the third day fifteen worms; on the fourth, twenty-four; on the fifth, twenty-five; on the sixth, thirty; on the seventh, thirty-one worms. They seemed insufficient, and the bird appeared to be losing plumpness and weight. He began, then, to weigh both the bird and its food, and the results were given in a tabular form. On the fifteenth day he tried a small quantity of raw meat, and, finding it readily eaten, increased it gradually to the exclusion of worms; with it the bird ate a larger quantity of earth and gravel, and drank freely after eating. By experiment, it appears that though the food was increased to forty worms, weighing twenty dwt., on the eleventh day the weight rather fell off; and it was not until the fourteenth day, when he ate sixty-eight worms, or thirty-four dwt., that he began to increase. On this day the weight of the bird was twenty-four dwt.; he therefore ate forty-one per cent. more than his own weight in twelve hours, weighing after it twenty-nine dwt., or fifteen per cent. less than the food he had eaten at that time; the length of these worms, if laid end to end, would be about fourteen feet, or ten times the length of the intestines. To meet the objection that the earth-worm contains but a small amount of solid nutritious matter, on the twenty-seventh day he was fed exclusively on clear beef, in quantity twenty-three dwt.; at night the bird weighed fifty-two dwt., but little more than twice the amount of flesh consumed during the day, not taking into account the water and earth swallowed.

“This presents a wonderful contrast with the amount of food required by cold-blooded vertebrates, fishes and reptiles, many of which can live for months without food; and also with that required by mammalia; a man, at this rate, should eat about seventy pounds of flesh a day, and drink five or six gallons of water. The question immediately presents itself, how can this immense amount of food required by the young birds be supplied by the parents? Suppose a pair of robins, with the usual number of four young ones, these would require, according to the consumption of this bird, two hundred and fifty worms, or their equivalent in insects or other food, daily; suppose the parents to work ten hours, or six hundred minutes, to procure this supply, this would be a worm in every two and four-tenths minutes; or

each parent must procure a worm or its equivalent in less than five minutes during ten hours, in addition to the food required for its own support. He was unable to reconcile this calculation with actual observation of robins, which he had never seen return to their nests oftener than once in ten minutes. After the thirty-second day, the bird had attained its full size, and was intrusted to the care of another person during his own absence of eighteen days; at the end of that period the bird was strong and healthy, with an increase of weight, though its feathers had grown longer and smoother. Its food had been weighed daily and averaged fifteen dwt. of meat, two or three earth-worms, and a small quantity of bread each day; the whole being equal to eighteen dwt. of beef or thirty-six dwt. of earth-worms; and it has continued to eat this amount until the present time. The bird having continued, in its confinement, with certainly much less exercise than in the wild state, to eat one-third of its weight of clean flesh daily, he concludes that the food it consumed when young was not much more than must always be provided by the parents of wild birds. The food was never passed undigested; the excretions were made up of gravel and dirt, and a small quantity of white semi-solid urine.

"He thought every admirer of trees might derive from these facts a lesson, showing the immense power of birds to destroy the insects by which our trees, especially our apples, elms, and lindens, are every few years stripped of their foliage, and often many of them killed. The food of the robin while with us consists principally of earth-worms, various insects, their larvæ and eggs, and a few cherries; of worms and cherries they can procure but few, and these during a short period, and they are obliged to subsist principally upon the great destroyers of leaves, canker-worms, and some other kinds of caterpillars and bugs. If each robin, old and young, requires for its support an amount of these equal to the weight consumed by this bird, it is easy to see what a prodigious havoc a few hundreds of them must make upon the insects of an orchard or park. Is it not, then, to our advantage, he asks, to purchase the services of the robins at the price of a few cherries? There has lately been some improvement in preserving our birds, and with a little more protection he thinks such an increase of them might be obtained as would save us from all the labor required for the appliances of tar, oil, zinc plates, and all other methods by which we seek, with very imperfect success, to destroy our mischievous insects."

In poetic diction, beautiful and peculiarly his own, our poet Longfellow describes the claims and consequences of the feathered tribe, in the "Legend of Killingworth." Read it and be wiser. Too often we act and countenance the following sentiment:

"You slay them all! and wherefore? for the gains
Of a scant handful, more or less, of wheat,
Or rye, or barley, or some other grain
Scratched up at random by industrious feet,
Searching for worm or weevil, after rain!
Or a few cherries that are not so sweet,
As are the songs these uninvited guests
Sing at their feasts with comfortable breasts."

We should protect all insect eating birds by every means in our power—example, moral suasion and legal enactment. Nearly every State has its bird law of some kind, yet in very many instances they are as dead letters, having neither fear nor force. This ought not so to be, and in no branch of usefulness is a more promising field opened for our agricultural societies, farmers' clubs, and all rural organizations, than in disseminating knowledge, and encouraging researches in this direction. With knowledge and enlightenment come progression and protection. It is a subject deep laden with importance to every one, for it is a question of famine and plenty. It is deep enough for our scientists, and our savans; it is broad enough for everybody. When we educate public opinion up to the standpoint that shall make it odious, and a crime to shoot, trap or kill any insect-eating bird, except certain kinds of game birds at specified seasons, then, and only then may we hope to see attained, and preserved, the proper balance between insects, our enemies, and birds, our friends.

By providing suitable nesting places, cosy and pleasant, due protection and care, destruction of animals and birds of prey that destroy them, our little canny bird friend will increase in our fields, groves, gardens and beside our cottage homes. Their services will richly repay, and their best songs be freely given for our solace and satisfaction. A new era will dawn and agriculture flourish. Commerce and manufactures, both dependent on the products of the soil, will receive, consequently, a renewed impulse. The world will be richer, happier, and nearer that which it might and ought to be. A step will have been taken, forward and upward, that shall never be wholly obliterated.

“ Whose household words are songs in many keys.
Sweeter than instrument of man e'er caught:
Whose habitations in the tree-tops, even,
Are half-way houses on the way to heaven.”

POTATO CULTURE.

BY JAMES O. ADAMS, SECRETARY.

The Potato, though designated as an Irish product, can not boast an Irish origin, and we do injustice either to the vegetable or the Hibernian when we call it a native of the Green Isle. It is a native American but a *South American*. It was first found, so far as history makes a record, in a wild and nearly worthless state, on the hills near the fortieth degree of south latitude, though by some authors it is maintained to be a tropical plant growing at a high elevation above the sea, in Mexico and Central America. It has a record dating back nearly three centuries. It was introduced into England and Ireland by Sir Walter Raleigh, but whether from its native soil directly or from some locality to which it had emigrated before its adoption by the English adventurer, history neglects to inform us.

From Ireland it came back across the ocean and was cultivated in North America. That it might be distinguished from the sweet potato, and because it had been exceedingly serviceable in the old country, it seemed very proper to apply to it the Celtic name it generally bears. In all probability it was brought to our State by the Scotch-Irish emigrants who came just prior to 1720 and settled in Londonderry. From that point and from Lynn and perhaps Andover, Mass., where a portion of the same seed was planted, its cultivation extended slowly but surely until it became a common vegetable on every man's table.

But we need not discuss the manner of its coming, nor speak of the obstacles that opposed its culture, nor need we dwell on its efficiency as a nutritive plant. It is here, notwithstanding derision and opposition, and woe be to the agency, be it man or insect or other tangible thing, that attempts to remove it.

The potato crop in the entire country, as recorded in the latest census, is one hundred and thirty-three millions, eight hundred and eighty-six thousand bushels, produced on an area of one million, two hundred and twenty-two thousand, two hundred and fifty acres. The value of this harvest is named at \$71,651,730.

The New Hampshire harvest for a single year falls but little short of five million bushels, worth at forty cents \$2,000,000, but as the average price is greater than forty cents, it is probable the result is nearer \$3,000,000 in value.

The number of acres which the people of our State appropriate to this crop is about thirty thousand. As reported officially, the national Department of Agriculture estimates our average product at one hundred and fifty bushels per acre, Michigan one hundred and fifty-five, and Vermont one hundred and sixty; these are the three most productive potato States per acre, though California claims precedence and Maine refuses to yield the honor.

But taking our own statistics precisely as officially given and computing the acreage by exact figures, the result is one hundred and sixty-seven bushels, an amount greater than any other State even claims. To us who live in the lower section of the State where we oftener fall below one hundred bushels than exceed it, the average product may appear exaggerated. But to those at the north, who not unfrequently harvest three hundred or even five hundred bushels to the acre, it will seem very small.

Thus far then we made it appear that New Hampshire is not only a good State to emigrate from, but *one of the best in which to grow potatoes!*

The two potato growing counties are Grafton and Coos. Grafton produces one million one hundred thousand bushels per year, and Coos about eight hundred and twenty-five thousand, both together furnishing two-fifths of the potato product of the State. Coos gives the greater crop per acre and Grafton cultivates the largest area. The two counties manufacture almost the entire invoice of New Hampshire starch, and show an annual product of more than six millions of pounds, one-sixth of all the starch made in the country. Coos makes three-fifths of this product and Grafton two-fifths. Grafton county grows more potatoes for the table than Coos, as it can do this more profitably on account of railroad facilities, which until recently have been almost wholly denied the more northern county. Then we may not only say New Hampshire is first as a potato growing region, but that

the northern county of Coos is the most productive potato grower in the union.

We may go still further and say that the little town of Colebrook, a delightful summer resort, in upper Coos, *is really the seed end of the potato business*. The number of bushels of potatoes which the people of Colebrook told the census marshal in 1870 that they raised the preceding year is one hundred and twenty-five thousand. Lancaster stands next on the list, having reported one hundred and sixteen thousand bushels, while the third in rank is Lisbon in Grafton county, which reports one hundred and twelve thousand bushels.

The chemical analysis of the potato shows that though different varieties indicate a slightly different proportion of constituents, a fair standard reveals the fact that seventy-five parts in one hundred are water; that fifteen or a little more are starch, three are sugar, three fibre, and that the remainder contains several elements not necessary to name in this connection.

The great value of the potato consists in its starch, whether we regard it for its nutrition or for its importance as employed in manufactures. As we have already intimated, those varieties which contain the greatest amount of starch are the best for the table, and of course the reverse must be true. But as these varieties do not generally yield so abundantly as the poorer kinds, they are not so profitable for the farmer to grow, though a recent variety called the Brooks Seedling, which originated at Lunenburg, Vermont, has promised to fulfil both requisites and produce five hundred bushels to the acre of first-class tubers.

Starch is more abundant in the potato late in the autumn than when first harvested, and has a tendency to increase, under proper conditions, until late in the season, when the germ begins to start; then it seems to direct its nutritive force to the nourishment of the germ.

There is not much muscle forming material in the potato, being scarcely one per cent., while the fat formers amount to nearly twenty per cent. In marked contrast with the potato in this particular, we find wheat to contain fourteen flesh forming elements, and sixty-six fat formers in every one hundred parts. The digestive character of the tuber is seen in the fact that baked or roasted potatoes will be digested in two hours and thirty minutes, boiled in three hours thirty minutes, while it will take four or five times as long to chymify the raw vegetable.

We should not expect to be very stalwart and live entirely on potatoes and salt however serviceable they may be in connection with other food. The French savans declare that the excessive use of the potato has reduced the stature of men in certain localities. Other cases are cited to show that it is impossible for man or beast to subsist for a great length of time on this diet alone.

To indicate what is necessary in a soil to produce the potato in health and abundance, let us see what is the composition of the tuber. We therefore submit it to the chemist who after reducing it to ashes, and of course driving off the water, will show us as Prof. Morton has done that more than one half, or fifty-six pounds in every one hundred, is potash; that sulphuric and phosphoric acids constitute twenty-six parts, or about thirteen parts each — one a little more and the other a little less. The balance is magnesia, 5 parts; silica, 4; common salt, 7; soda, 2; and a trace of other elements.

Now let the chemist go through a similar process with the vines, and he will give us, potash, 28; soda, 16; lime, 7; phosphoric acid, 17; sulphuric acid, 7; silica, 7; common salt, 12, etc.

Now these analyses show us that the soil adapted to the crop we are considering, should possess potash abundantly, and the other agents named in a proportionate degree. The potash can be best supplied by an application of ashes; the sulphuric and phosphoric acids by well made phosphates, containing both of these elements.

But says the farmer, "how can I know this? I am no chemist, and if I were I could not afford to bring my laboratory to my lands, light my lamps and apply my acids. How can I tell just how much potash, and plaster, and bone and salt to use?"

This is a natural thing for the farmer to say when we talk about chemical substances, and I should be as awkward in ascertaining the exact amount of each substance my land required, as any farmer, for I am not a practical or professional chemist, but I may give you some practical suggestions in what I have to say, from which we may profit.

You may have a soil that in a great degree is adapted by nature to the plant. As you see a depreciation from time to time in your crop, you add manure of some kind, but you add it at random, and as the stable manure which you are accustomed to use contains the element needed, and some not immediately necessary, you improve your harvest, but you cannot tell precisely why or

how you do it. You sometimes plow deeper and cultivate better and gain in your results by the operation. But can you tell the exact reason? You may guess at it, and may exercise good judgment and come near the real explanation of the result produced.

So with regard to the application of fertilizers. When you find your harvest diminishing, make an experiment, on a small scale this year, apply ashes to a section, plaster to another, ground bones to a third, and salt to a fourth, and mark the results. It will be a good experiment to apply two or three or all these substances to experimental plats, and note the effects. Repeat this year by year until you are certain of the effects. Then let your experience be the guide for future operations. I would not tell farmers that a chemist could go over their lands and teach them how they can grow five hundred bushels of potatoes per acre, where now they grow but three. It might possibly be done, but ordinarily it would not be practicable, and such is not the office of the chemist, though I have heard the doctrine maintained. He can give many valuable hints, on which you can reflect and in accordance with which you can experiment and be remunerated for your effort, and that to the extent of his aid to the average farmer.

Could we find ready made just the soil for producing the best quality of potato—not necessarily the greatest amount—we should select a sandy or slightly gravelly loam, and the more recently it had been subdued after the removal of a forest growth and fully burned over, the better. If we could find no such soil we would next seek an old pasture, or a light loam covered with greensward. This for an excellent quality of potatoes for the table, such as open white and floury, and have no “hollow heart,” or adhesive flesh. But even such soil might need a little stimulant in the hill, a small amount of plaster, or bone meal, or ashes. If it becomes necessary to apply stable manure, it should be thoroughly decomposed, and I would in no case apply green manure in the hill.

Such a dressing harrowed in and mixed with the soil would increase the quantity while it would injure the quality. For a greater crop, one that will bring the most money at the starch factory, I would seek a richer and a moister soil, and would not be very parsimonious of stable manures, or commercial fertilizers, and I would vary my culture in all respects as the case required.

In my neighborhood, where much of the land is light, there is soil of a gravelly, loamy character that is strong and productive, but it always requires a dressing to compensate for the frequent croppings it has received. I have used phosphates, ashes, plaster and guano, successfully. I do not grow a harvest of three hundred and fifty bushels like the California products for the starch factory, but am satisfied with one hundred, and delighted with one hundred and twenty-five bushels per acre, of the varieties that I prefer for the table.

A good compost, cheap and applicable to most soils, may be home-made in this way:—Take, of dried meadow muck, 6 parts; leached ashes, 2, or unleached, 1; slaked lime, 1; charcoal dust, 1; sprinkle a little salt, or a few pailsful of brine, work it over two or three times and apply a handful to the hill. The cost will be small, the results generally profitable. An application of the compost at hoeing will have an important influence on the crop.

If my soil was such as I have indicated a preference for, I would plow and plant as early as circumstances would allow. If moist, there would be a necessity for later work, but I would not delay to put the seed into the ground when the condition of the earth would permit. A clayey soil—all soils in fact, but that especially—will be in a better condition for the seed in spring-time, if plowed in the fall and left in a somewhat broken state, so as to be better acted on by the frosts and rains of winter and spring. It is not likely that any one will plow too much or reduce the earth to a pulverization which will destroy its productive power. Therefore let me say, plow in autumn and in spring, for “tillage is manuring,” as was maintained by one of the fathers of improved farming years ago. I should prefer to keep the common harrow away from most potato-fields when in a state of preparation for seeding. A rocky field, one not well plowed, filled with grass roots, or bushes, or much broken in its surface, will well endure intense harrowing, but an alluvial soil, that has been twice plowed, deep in autumn and shallowly in spring, needs no application of the common harrow.

It is customary with nearly all farmers to furrow their potato fields, and often to run the plow furrow five inches deep and to drop the seed at this depth and cover it so deep that neither sunshine nor warmth, and but little rain will visit it. Experiments show that the potato should not be put deep into the earth, but occupy a position but little below the natural surface. If the

cultivator desires deep covering, let him make it, not by putting the seed much below the surface, but by drawing the earth up over it when near the top of the soil. Especially should this course be pursued on moist land not well underdrained.

If manure is to be applied in the hill, it should not as is too often the case be *below* the seed, but *above* it, though alkaline stimulants should not be thrown directly upon the tuber unless reduced by the application of loam or muck. Guano and the phosphates, and unleached ashes may be profitably scattered around the seed rather than above or below it. Unless the soil is very productive I could not advise the close planting which I have noticed in the northern counties of our State. On good land, adapted to the crop, properly manured, I have no doubt but potatoes in drills not more than three feet apart will yield the most profit, but on such lands as we till in most sections below the mountains and lakes, a crop with rows three and one-half feet apart and hills at two and one-half or three feet, will be a sufficient draft on the productive power of the soil. But on new lands—for starch—as in Grafton and Coos it will be advisable to plant more closely.

As the potato sends its first germ above the surface, if the land is weedy or the soil not entirely friable, it will be a serviceable work to stir up the earth with a cultivator or light harrow. Never mind disturbing the plant. Not one hill in a thousand will be injured by the process, and the result will be felt in the killing of tender weeds and in admitting light and air into the soil.

Maintain clean culture by the use of the cultivator, the horse-hoe and the hand-hoe, until the blossoms appear, not hilling up extravagantly, then withdraw from the potato field your implements of culture until the day of harvest comes, but do not forget to sow plaster or ashes on the growing vines.

But you say I haven't hinted yet as to the seed to plant, whether to seed freely or lightly, whether to use mere eyes or sections or whole tubers, whether to put one or two or four pieces to the hill. Now you can, if you choose, prove each plan the best, for we have testimony favorable to each practice. While one man succeeds with only eyes, another does quite as well with sections even of a sprout. The third employs uncut tubers, while his neighbor declares he can succeed better with fragments. Mr. A. wants but three stalks in a place, but Mr. B. don't care if there are a score. A man on this side of the street gives the tips or

seed ends to his hogs and plants that part to which the roots and the top are all attached, while his neighbor on the other side eats the bulky portion and plants only the tips.

Experimenting and comparing the experiments of others I have thought that fragments with eyes, so that there may be two or three stalks to a hill, were sufficient, and I am inclined to think that, so far as practicable, we had better seed with medium sized whole tubers, than with eyes, sets, or sections, and that five or six stalks indicate no bad culture. When a potato has many eyes let it be divided so that not more than four or six germs appear in a hill. By all means, select sound fair sized seed, whether it be planted whole or in sections.

There is an important matter in the cultivation of the potato that demands attention, that of the rot or disease which has caused immense loss to the producer. It has been present with us at times for a quarter of a century. Prior to 1845 it was not known among us, though it has existed in other countries for a longer time. It was prevalent in Holland in 1842-43, and in Canada in 1844. It has since been recognized wherever the potato is grown. It was so wide-spread in Ireland as to lead to the starvation of a million of people. That it existed in the native land of the tuber centuries ago, and even in its wild state, has been fully substantiated. It has been the subject of discussion by scientists and the theme for speculation, until volumes have been filled with theories, reasonings, explanations and remedies regarding it. It was argued that it was caused by an insect; that it resulted from a degenerate state of the potato in consequence of repeated planting; that it was fostered by cutting the seed or depending on eyes or sprouts; that electricity produced it; that too high manuring promoted it; that it was due to the absence of constituents in the soil; that it was induced by comets and by a want of life power in the air; and more than all that it was a punishment for the sins of the people. But first of all as well as last, it was maintained to be a fungus growth, but, as it could not be fully explained, that theory was abandoned, and at length resumed and pretty fully established a few years ago by DeBarry of Berlin, by the aid of his botanical knowledge and a powerful microscope. I have often maintained that this is the cause of the disease, and while stating other theories have regarded this as the most natural. This fungus product is germinated by *spores*, as the seeds are called, very minute, and pro-

vided with wings, that float them about in the air unseen. They seize upon the leaf, feed upon the green matter, and either by following down the stalk, or penetrating the soil, fasten on the grown tuber and destroy it. This has been shown to be the fact by DeBarry, and has been confirmed by other experimenters. It is now endorsed by chemists, botanists and microscopists as the true explanation though a few learned men still advocate the insect theory.

The fungus is perpetuated from year to year, or may arise anew under the same circumstances, whatever they be, which first caused the parasitic growth. It is most probable that the germ of the parasite or the vital element in the *spore*, is harbored by the tuber which in darkness and in a cold or temperate atmosphere will not rot, though infected, but will suddenly reveal signs of decay when exposed to light and warmth. Potatoes having the disease, on being planted, or placed in a warm atmosphere, afford the proper conditions for a new growth of the fungus.

The fact that the disease is caused in the way named was proved by taking these minute seeds and applying them to a section of a potato, and keeping its complement, or remaining portion, in similar circumstances protected from contact with any medium that could bring the disease. In a short time the former part was diseased, while the latter was *saved*. The disease seldom appears before the flowering of the plant and it is generally more marked in wet seasons and on wet soils, and in those years when excessive heats follow frequent showers and much thunder and lightning. The past season developed it more than preceding years. This discouragement to the potato grower is great, and unless a remedy can be found our acres of potato growth will grow less year by year.

But is there not a remedy? Can we not prevent the disease, drive away the evil and restore the crop to its former healthfulness? It is maintained that we can, or materially modify it; and the advocates of the "degenerate" theory and of several other suppositions have advised correctives naturally suggested by their theories. My advice is to select high, dry land, not overtaxed by former crops, dress with decomposed manure or special fertilizers adapted to the soil, apply elements that are wanting, use no unfermented manures, plant early, take sound and to a practical extent uncut seed, reject eyes merely, adopt drainage, and select the very best tubers from the hill at harvest time for seed.

When we select a bushel of wheat or oats for sowing, we take the brightest, plumpest we can find. If we plant corn, we take the soundest, best filled ears. If we desire to raise a sheep, a horse, or an ox, we have reference to the stock we breed from, but our practice says no matter what we take for potato seed. The smallest, the most shriveled, that which has been rejected for market or the table, which in fact the swine don't grudge us, we take to be good enough to grow a harvest of abundant and hardy potatoes. We are too parsimonious even for this, and we often cut them into mere bits and hope to gather sound tubers. We do this not one year only, but we repeat it year by year, grading down continually instead of attempting to improve our product as we do in other culture.

Though these agencies will not prevent the disease entirely, they will have a tendency to counteract it, and aside from their influence in this respect, will contribute to better crops and to a far better quality of the potato.

Professor Brewer in recent lectures to the Connecticut farmers gives the following suggestions in addition to several that I have already named. He says "plant deep" or make a "high hill." This is not good advice so far as producing a crop is concerned, though it may have a tendency to keep the disease away from the tuber by the interposition of much soil.

"Mow off the tops and remove them as soon as they are affected." This prevents the fungus from reaching the root.

"Press over the tops with a roller" so as to bend them away from the hills and keep the spores from descending directly on the tubers.

An English experimenter proposes to "*green*" all potatoes to be planted, so as to destroy germs that may exist. Mr. Holland of Sussex County in the south of England plants on ridges, and when the blight first appears strips off the leaves. Prof. Bellman of St. Petersburg dries his seed and Mr. Dickinson of New York records success in the same way.

Experiments will be continually made, and though we may not at once be fully successful, we shall make advances in the right direction.

With care such as has been suggested we may yet save this essential and economical plant. To ensure a good quality and an abundant harvest we must resort to new processes and often obtain new seed. A continuation of the same seed from year to

year is generally regarded as a bad practice. Few potatoes hold good for more than a dozen years. The old varieties we knew years ago have gone by and those choice kinds that were common even since we began to till the soil have lost their early character for the table.

Not only is it necessary to select varieties from abroad occasionally, but we must renew from the seed ball. The late Mr. Goodrich performed a beneficial deed when he produced from the plum hundreds of new kinds, some of which have been leading varieties for years. So, too, with Mr. Bressee who has recently introduced many valuable sorts. You understand this matter. I need not explain. Germinating from the seed is going back to the true source. The first year will produce a great variety of shapes and colors and sizes. The second will so far mature certain kinds as to induce us to select some and reject others, and by continuing the process four or five years, entirely new sorts will be presented. A trial will now be needed to enable us to determine the quality for eating, for stock, and for manufacture. The color, size and keeping qualities are to be regarded. Do they rust? Do they rot? Do they yield well? Are they early or late? Do they wander far from the parent root? Are they defective in any respect? These are questions on whose answers will depend our decision whether to cultivate or reject.

These are some of the remedies for the rust and blight which redden the potato field, and for the dread disease which destroys the root, and added to them are some of the essential principles to be regarded in securing hardy and eatable potatoes. We must regard these or others equally important or abandon the culture of this now valuable root.

But the potato has other enemies in abundance. There are worms that destroy the plant or retard its growth; there are other insects that devour the grown product of much toil and continued care. In the spring the sluggish cut-worm gnaws down the young plant; the little hard and persistent wire-worm imbeds itself in the tuber, and the large white worm, an immense consumer, eats up half a bulb at a meal. There are likewise numerous other creatures that prey upon it. But the great enemy is the Colorado Potato Beetle, which is making rapid progress eastward, and will, before many years, challenge our most energetic efforts and our greatest skill to baffle it.

I might occupy still more time in discussing the manner of harvesting and storing potatoes, and even present suggestions as to the use of the tuber in its various appropriations, but having already occupied more than the assigned half hour, I leave the further consideration of the matter to those who shall engage in the discussion.

REMARKS OF N. W. HARDY.

At the close of the lecture on the potato, at Marlborough, Mr. Hardy was called up and made a sensible talk. By request of the Secretary, Mr. Hardy has furnished the substance of his remarks in a communication which follows. It will be seen that he misapprehended the Secretary in one point, that of late hoeing. We argued in favor of using the hoe and cultivator until about the time the blossoms appear, then withdraw the implements of culture.

MR. HARDY'S COMMUNICATION.

I have been much pleased with your entertaining and instructive lecture, but shall take issue with you on two points:

First, I would not have a man hoeing my potatoes after they are large enough to blossom, for the ground is then filled with feeding roots (near the top). The hoe and cultivator will do more hurt than good. I usually hoe my potatoes soon after they come out of the ground, run the cultivator between the rows; that leaves the soil light and smooth; in hoeing, leave it a little dishing around the vines, making a broad hill, with a gradual descent to the middle of the row. This will give the feeding roots facilities for running between the hills and rows, and readily drinking in the rains and dews that fall, passing the nourishment to the tuber roots. They should be seeded light with the hills and rows far enough apart that the vines may grow erect admitting the sun and air to the ground, thus warming and nourishing the feeding roots. The hills should be made just large enough for the potatoes to grow in; some varieties that grow near the vine, like the Early Rose, need more hilling to protect from the sun than later kinds that require a broader hill. You will find that most of the potatoes are near the outside of the hill. In other words, to illustrate my point, I will tell a story:

When I was a boy, was hoeing potatoes for a good old farmer, he came into the field and says to us, "Boys! Boys! What are you hilling up those potatoes so much for? You'll spoil them. I want my potatoes hoed so that when I happen into the field, cold nights in the fall, I can hear them halloaing, 'Lay over, lay over, you're crowding us out of the hill.'"

Potatoes cultivated as above will stand the drouth much better than when a plow is run between the rows, and all the cultivated soil hoe dup

around the hill, thus checking the extension of the feeding roots, and letting the rains drain off between the rows. The feeding roots run very near the top of the ground. I have found them more than four feet in length, running from one row to another.

Second, In regard to seed, you very truthfully say, "that you would select the very best corn, rye, oats, and barley, for seed, and that the same rule will apply to potatoes: select the largest and fairest and plant them whole, if you wish for a good crop. If you plant small ones, you will harvest small ones."

I agree with the gentleman in regard to the seed of the cereals. If you plant an imperfect kernel of grain, you will get an imperfect sprout. The potato, unlike the cereals, has its eye, and roots like the grape vine. If you disconnect those roots by cutting an eye on each piece, every eye will start, (while on the whole potato only a part will start,) thus increasing the seed without injuring the present or future crop. To illustrate the point, if you lay down a grape vine, ten feet long, covered with earth, and it produces ten vines, the one nearest the parent stock may grow three feet, while the one at the other end may not grow more than one foot. Yet no one doubts but the small vine is just as susceptible of producing as large a vine, in five years, with as large and perfect clusters of grapes as the other. If you plant a small potato you get just as perfect a sprout as the one from a large potato. In other words, if you take a small potato, the size of a marble, that produces one sprout, and cut a piece of the same size from a potato weighing two pounds, what advantage has one over the other? None.

I once planted some potatoes the size of a green pea in my garden, for experiment. They produced one sprout each. The Jersey Peach Blow grew a vine three-fourths of an inch through, with several large potatoes, one weighing a pound. (The vine, with potatoes, was carried to the Cheshire County Fair, with statements.) The Chenango variety produced seven fair sized table potatoes, and others with similar results. Would not recommend potatoes of this size for planting as the sprouts are too weak to come up through the sods and earth.

For the past twenty years my practice has been to plant the largest of the small ones, cutting two eyes on a piece, and putting three pieces in a hill. Every eye will not come; intend to have three or four stalks to a hill. Allowing these small potatoes to be worth not more than twenty-five cents per bushel, and the large one a dollar, and the small ones producing three times as much seed as the large ones, would make a saving of \$2.75, without materially injuring the crop. In seeding an acre, every one can readily see that there would be a great saving of expense, without lessening the crop.

I very well know that in these remarks I am stemming the current of public opinion, (or prejudice, for it is nothing more nor less,) for most people when they experiment with seed potatoes overseed with the small ones. But my theory is to seed just as light with small ones as with large ones, or in other words allow but four vines to the hill. If you get a dozen or fifteen stalks to a hill, you will surely get small potatoes, for there is just as much impropriety in overseeding potatoes, as corn.

I have had a large experience in the potato culture for the last twenty-seven years, have given it much study and attention, and believe my theory to be correct, and that there will be no injury to present or future crops by following it. All I ask is, try it.

REMARKS OF HON. WARREN BROWN.

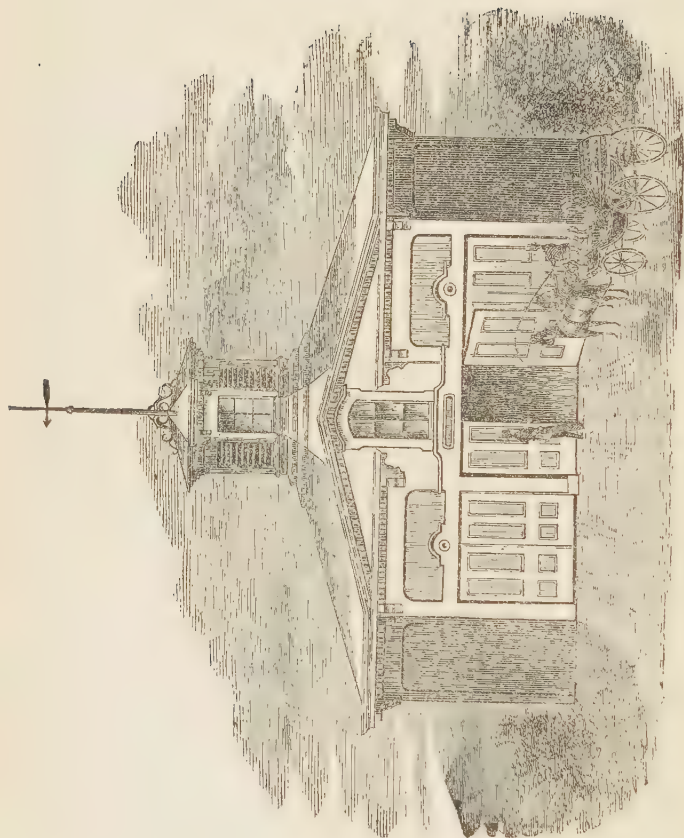
At the meeting at Hampton Mr. Brown said: The potato crop is one of great value to the country, as it is an important article of food among all classes of people. When the country was new abundant crops were grown with little cultivation, which continued until the appearance of the disease, which made it an uncertain crop. Good crops were raised in this town, large quantities being exported. The repeated cropping of the land, which has been cultivated for two centuries, and the appearance of the disease, have greatly reduced the yield; but few are now sent to market. From one hundred to one hundred and fifty bushels per acre is considered a good yield. While we hear that Coos county raises from three to four hundred bushels on an acre, it is of the California and coarser varieties. We can raise nearly as many of the popular varieties which have a demand in the market, as they, which is gratifying to us, as we had conceded an advantage in this respect to the upper counties of the State. It is often the case that sections which have acquired a reputation for certain crops do not possess all of the advantage claimed. The pink-eye potato was raised extensively about here; it found a ready sale in the fall for shipping to the West Indies and southern ports. It was in demand because it came out in good condition at the end of the voyage, which better varieties failed to do.

The newer varieties have not generally done well for more than a year or two at a time, without change of seed. Many procure seed from the east every year. The Goodrich varieties did not do well for more than a couple of years, and long ago ceased to be planted as they decreased in yield and depreciated in quality. The Davis Seedling has been a valuable variety holding its own since its introduction. Change of seed is generally advocated, but does not always hold good. On our farm we raised the Pink-eye potato for a great many years. A number of times I procured seed from other farms, but it never did as well as the seed we raised. The same has been true with the Davis Seedling.

On a large farm where the same ground is not planted more than once in ten years, change of seed is not necessary, if vigorous varieties are grown. We formerly seeded heavily, cutting only the very largest, one piece to the hill. Of late we have cut leaving but two eyes, with full as satisfactory results. I was led

to do this from a circumstance which I will relate. Having hired an Irishman with the provision that he have land enough to plant a barrel of potatoes, he cut them smaller than I had ever seen, in many cases not more than one eye to the hill. It took nearly half of my potato ground. I awaited the harvest with great interest, his crop was as good as mine. We had used four times as much seed. Since then we have seeded light with good success. *

The experience people have had with the Early Rose should teach us a lesson in seeding and good cultivation, as good care and cultivation would make a great difference in the yield of the common varieties. Dry land is essential in raising potatoes. Water induces disease. Plaster is often used with good success; I have seen the crop doubled by the application of a tablespoonful to the hill. Should not favor the use of ashes, as is often recommended by speakers and writers. Having used large quantities for the grass crop, we found on breaking up and planting potatoes that they grew rough and were eaten on the surface, rendering them unfit for the market. While the ashes seemed to promote growth the tubers were unfit for use. Have seen good crops raised with green, unfermented manure. Contrary to general opinion it did not induce disease. Bone manure is especially valuable. Dry land, well cultivated, with any of the manures named except ashes, do not often fail to make a good yield.



MODEL-STABLE.

THE EAST AND THE WEST.

BY CARLOS G. HAWTHORNE, ESQ., OF HOPKINTON.

Thirty-five years ago I found among my father's books a copy of the works of Thomas Jefferson, which I read with considerable attention, and I trust I was instructed and improved thereby. At least, I am sure of this, that the information and impressions I thence derived became no small part of the intellectual and moral force with which, in my humble way, I have met and endeavored to perform some of the most serious duties of my life.

Of the multitude of great ideas contained in those writings, which have "grown with my growth and strengthened with my strength," I clearly recollect this — "Let the farmer forevermore be honored in his calling, for they who labor in the earth are the chosen people of God! in whose breasts he has placed the peculiar deposit of substantial and genuine virtue." Since I first read that high tribute to the farmer and his calling, I have had frequent occasion, among the hills of New England and upon the broad prairies of the West, by professional and other business intercourse with all sorts of men, to learn and know: — That, all things considered, the worthiest life-work of men is some one or all of the varied forms of agricultural industry; and that he who intelligently follows it, "though hard the hand and brown the cheek," is the peer of men who pursue other vocations.

Entertaining these views, you cannot wonder, then, my friends, that I learned with the greatest pleasure, a few days since, of the organization of your society, for the purpose of achieving a higher intelligence and culture, and a fuller success in regard to every part of the wide field of agriculture. And you can well believe that it is with mingled feelings of diffidence and pleasure that I

stand to-day in your presence to say a few words touching the comparative advantages of

AGRICULTURE EAST AND WEST.

An old adage runs as follows: "A rolling stone gathers no moss." Another saw, as true as old, also coincides with nearly every one's experience—"Contentment is true riches." The man of business mainly related to one locality cannot hope for large success by frequent change of base. Nor can he, engaged in any calling, hope to win the smiles of Fortune who steadily imagines that he labors at too great disadvantage, either in place or circumstance, for so discontent comes, that unnerves his arm and befogs his brain, till he becomes "as worthless as a sucked orange."

Another thought strikes me with some force: A prime condition of success lies in understanding the conditions under which, if at all, one employs his energies, no matter what the purpose may be.

With these suggestions let us consider the topic.

GEOGRAPHY.

And first for the geography of the question. The East shall comprise New England, and the West that portion of our wide domain lying west of Lake Michigan, and east of the mountains, and north of the Ohio river.

SOIL.

The cornfields of the West, *i. e.*, the sections wherein that grain is most easily and largely produced, comprise the Grand Prairie of Illinois—one hundred by one hundred and twenty miles in extent; southern and western Iowa, including five to fifty miles in width along the eastern bank of the Missouri; large portions of Kansas and Nebraska, and nearly the whole of the great State of Missouri. Those sections were evidently the last to be submerged by the vast inland sea which once covered the whole tillable prairie, and contain the accumulated detritus and humus of hundreds of thousands of years, varying in depth from ten to thirty feet; and so rich in all the elements required in successful corn-growth as to be practically inexhaustible. Five years ago I

saw opposite St. Louis a single field of ten thousand acres, cut here and there by the country and neighborhood roads, but unfenced, on which corn had been grown for twenty-five consecutive years, and the crop then standing, at an average of twenty feet, was equal to any preceding.

I don't know as that was the cornfield wherein the pig of the story sat on his haunches and squealed his loud disgust at his utter inability to reach the tempting ears ten feet above his highest leaps, but it may well have been.

WHEAT FIELDS OF THE WEST.

Turn now to the vast wheat fields of the West. Their extent is best expressed by the single word immense. They comprise northern Illinois, all of Wisconsin, Minnesota and Dacotah, a very large part of Iowa, and one-half Nebraska and Kansas. The productive soil, from four inches to ten feet in depth, is made of drift from the far-away mountains west and north — decomposed lime-rock near by, and endless accumulations of vegetable fibre, constituting, with the single exception of the Black Sea country, the best wheat soil of the world.

On the contrary, the East has a less kindly and productive, and a far more ragged soil, and none like the luxuriant bottom lands I have mentioned, save, perhaps, in small degree, the narrow fringes of alluvial along the few largest water-courses.

TILLAGE.

Another which shows a wide difference between the two sections, and is in favor of the Western farmer is the ease and rapidity with which agricultural operations are there performed. The plowman may start his prairie furrow in the morning, and, if he chooses, continue it unbroken till the even, and so on, while here, upon the hill farm, a hundred baulks in a day's plowing would be cheerfully allowed if that number could be made the average instead of the almost endless encounters with the stony ribs of our tillable slopes. Nor is this all! The Western farmer can plant, sow and gather his product, if he so desires, by the aid of machinery, while his compeer in the East must rely mainly on his own brawn.

And all this suggests

THE FIRST GREAT PROBLEM

for the Eastern farmer to solve, which indeed he must solve if he would hope to succeed. It is plainly this: Whatever he may think of his muck-bed — however esteem this or that fertilizer, he must determine the best method of supplying plant food to his soil, and as the correlative of this he must begin by

STOPPING THE LEAKS!

The man who endeavored to use a sieve as a well bucket did not succeed till he puttied the holes; so the New England farmer cannot hope to meet the needs of his various crops till he stops the leaks, which begin in every mountain pasture, in every wood lot, in every hay and corn and wheat field, widen through every village, town and city, trickle from every sink-spout and cesspool and sewer into every creek and river, and then debouch into the sea.

Just how and when this shall be done is your province to determine. That it will be achieved in good time I am certain. In passing to another phase of the matter, let me suggest a point which, in my judgment, is of grave concern, not alone to the members of this society, but as well to every New England farmer.

BONES MUST BE UTILIZED AT HOME.

Let me instance. Concord can supply three hundred tons a year, all of which go to waste or are carried to Boston to be ground, or are sold bodily to the agents of English farmers, — a small part only comes back to New Hampshire at a profit of three hundred to four hundred per cent.

I haven't the figures at hand, but I believe our farmers buy superphosphate at fifty-four dollars per ton, which contains only twenty per cent. of bone, the rest being dirt and water, but little better than common mould, well dampened by the last shower. Judging by the carefully and ably conducted experiments of gentlemen whom I see before me, of which I have read, even this wasteful method pays. What then would be the result if a hundred of your farmers should club their money, and at the expense of five thousand dollars, establish a bone-mill, and at one quarter the cost, make a far better article than the best now on sale?

As largely affecting the subject the question of *Temperature* must be considered.

DROUTH.

Both sections are liable to be seriously injured by want of rains and snows. The West owing to the nature of the soil wherein lies its peculiar excellence is the most largely and suddenly affected. Often and often during the long, hot summer, when the growing vegetation most needed the inspiration of the kindly moisture, have I seen the water of the slough and creek disappear — then the frying and baking of the earth, till wide fissures opened, and the prairie seemed like another Dives asking in vain for a drop of water to cool the tongue.

Besides, by reason of its flatness, the frequently excessive rains of the winter and spring time long delay the planting and sowing, so that it has often happened, and will happen again and again, a late spring discourages the farmer, and then the early frost comes to nip the unripened crop, and the year's hard labor goes for naught.

On the other hand, the East from its natural drainage never suffers to the same extent from excessive moisture; and by reason of a more mould-like soil, never suffers to the same extent by want of rain.

You have recently had a severe experience in three dry summers and the scant snows of as many winters, so that short crops followed, but I have, time and again, beheld far wider disaster result from the parching sun of a single summer in the West.

Why! the very rocks which impede your plows, and render the face of pasture and field forbidding, are great but silent and tireless forces in the equalization and distribution of heat and cold and moisture, and which, if only planted *there* in prairie soil as *here* in our thinner, poorer mould, would make the West almost a paradise! But they are not there, nor is the West a paradise.

EXTENT AND VALUE OF CROPS.

With so great advantages, of course the Western farmer can till four or five times as many acres as the Eastern, and do it well. A great many there do, indeed, cultivate ten, and some twenty times the area of the best and largest farmers here, but in most of

such cases the whole conduct is of the worst, slipshod fashion, and in no sense farming, nor does it pay better there than here.

It should seem that the average product ought to be far larger West than East, but how stands the record? Take the year 1868, which, all things considered, is, perhaps, the fairest for both sections, and how do we find them, acre for acre and side by side? I employ the government statistics because I deem them substantially correct, having so found them to be after repeated examinations; and, at least, they cannot be considered partial. The average yield and value per acre is given as follows:

CORN.

West, 29 bushels, value	\$17 09
East, 33 bushels, value	47 00
Difference	16 00
Add fodder	29 95
Which is of no value West, and the difference is per acre against the West	45 95

WHEAT.

West 14 1-6 bushels, value	\$14 46
East 13 5 6, 2-6	31 44
Difference	16 98
Add straw	14 00
The difference in favor of East is	30 98

These are the two great grain products whereon the West has claimed pre-eminence.

Let us now consider other products, which the great West supplies in almost endless profusion for home use and exportation, and without which many more appetites would go unappeased and many more backs unclothed.

HOGS.

West, average value	\$7 41
East, average value	18 60
Difference	8 19

SHEEP.

West, average value	\$2 28
East, average value	3 36
Difference	1 08

CATTLE.

West, average value	\$27 46
East, average value	55 09
Difference	27 63

MILCH COWS.

West, average value	\$36 94
East, average value	58 33
Difference	24 38

BUTTER.

West, costs 14 cents and sells at 12 to 23 cents.
 East, costs 20 cents and sells at 25 to 50 cents.

But, notwithstanding, the balance is still on the side of the Western farmer, for does he not raise his acre of corn and wheat, his pig, his sheep, his bullock, his cow at far less cost than does his Eastern compeer? Assuredly! And if this were all, wherein could you, my friends, hope to compete with him?

But this is not the whole of it! To what end do you of New Hampshire and they of the wide prairie so steadily and manfully labor except for the gain and profit expected to be secured, beside the simple living all must have?

A recent New York newspaper, giving an account of the wonderful productiveness of California, among other things, described a field of pumpkins. They were so many feet long, so many feet thick and weighed so many hundred pounds each, and covered the lot (I think of forty acres) so closely in all its parts that it was a matter of course for any one desiring to travel over the field, to step easily from one pumpkin to another, in any direction! and as if to pass the one memorable step from the sublime, stated that the entire lot were of no value and would not even bring so many cents as there were acres, because every body else had similar pumpkins, so there was no market. I do not vouch for the story, but it seems to point the moral of this portion of my remarks.

What in the world could the farmers of Illinois do with their two hundred million bushels of corn, or the farmers of Iowa with thirty million bushels of wheat, with all of the States about them crammed with like products, if there were no outlet and no market other than their own, which would be none at all?

The poorest man I ever read about was Sinbad, while he lay in the valley of Diamonds. All about him lay great heaps of gold and jewels and priceless gems — a world's ransom, if need were, and it was all his, so he gloated over it, counted and weighed and measured it, hugged himself with wild delight till nature resumed her sway and he fell asleep. When he awoke he saw indeed the countless wealth, again felt the pleasure of ownership: but he saw beside, towering a thousand feet above him and his glittering heaps, the bare, smooth granite walls which made his prison, perhaps soon to be his grave. And then he felt his utter weakness and poverty. At that moment, you remember, the pieces of meat fell into the valley, and the huge Roc descending from the cliff, fastened his talons in the meat and bore it away. Sinbad took courage, gathered so many of the jewels as he could carry in his dress and about his person, attached himself to a piece of the beef, and then, when the bird came again, fastened firmly to his legs and was safely carried away to liberty and the enjoyment of a great fortune.

Sinbad was no more powerless respecting his heaps of gold than the Western farmer his surplus crops without the rail-car and steam-ship.

And herein lies one of the great advantages of the Eastern over the Western farmer. The former finds a ready market at the highest price at his own door, while the latter reaches his over fifteen hundred miles of most expensive inland transportation. Nor is this all. It is true, indeed, that the farmer of the West disposes of some of his product to the immigrant; now and then a local demand springs up by the opening of a new mining adventure or the building of a railroad, and he sells by the way to the people of the East; but these, all of them, are but drops in the bucket, and his great market lies beyond and at the end of three thousand additional miles of ocean carriage, and by the intervention of a great army of middlemen and agents, who each must live and have his profit out of the gross proceeds before the producer touches a dime, and the result is, the farmer no more fixes nor can fix the price of what he has to sell than a dead man, and is always at the mercy of a combination of scoundrels who have wit and money enough to form a ring in farm products, or to control a through line of transportation. Let us look at this matter a little in detail: The bullock he raises forms a bunch and enters the car at the smallest advance above cost on the

banks of the Missouri — glides through Iowa, and breaks bulk and changes owners in Chicago, so at Suspension Bridge, at Philadelphia, or Albany, and finally in New York or Brighton to be retailed at home or barreled for a foreign market. Every rod of the way he has dropped some of his fatness and has taken some of the grazier's profit. So of the pig, the corn, the wheat. In short, broadly stated, it takes one bullock to market another, one pig to dispose of his next of kin, one bushel of wheat to supply the consumer with another bushel, and so on till hardly a wreck of profit is left behind!

MANUFACTURES.

Nor is this all: There are but few manufactories in the West. But few boots and shoes, less clothing and cloth and hats, and of what are absolute necessities everywhere, are made in the West; so the hardly-earned profit must again and again be sweated at Lynn for boots, at Boston, Lowell, Lawrence, Manchester and other manufacturing centres for the best of his gear.

Another thing: He must build roads and bridges, fences, houses — establish schools and churches, and over all, from foundation to turret-top, to secure all, rear the broad fabric of the State.

On the contrary, *here* the whole vast, complex machinery whereon depends the best civilization of our country — that of New England — is already built, and ready to be used in the attainment of the highest human development.

THE SUM OF IT ALL.

The sum of the whole matter is this: The Western farmer has the kindlier and more fruitful soil and larger opportunities for profit by speculation, but at present is, and for a long time to come must be, hindered of the fair results of his industry, and be long deprived of the highest enjoyments of living.

The Eastern farmer, with fewer advantages for successful agriculture, makes a home and the largest proportionate gain, and lives surrounded by influences of the highest nature, strengthened and refined by two centuries of the enlightened efforts of some of the noblest men and women who have ever lived. Influences of such force and vigor, and so benign, that the reflection thereof, through the hundred thousand eastern emigrants, settled singly or in groups, here and there upon those broad western prairies, in

large measure permeates, fashions and controls all the civil and political institutions of the vast interior.

But it is impossible, my friends, in a short address to do anything like justice to a subject so varied and full of the most important details as this, which I have barely attempted to sketch. Not hours but days should be employed in its fair consideration and settlement. Besides, other gentlemen are to follow; so in conclusion, let me raise this question: Are, therefore, none to go West? Most certainly! Thousands upon thousands! a great multitude, in the years to come, with brave hearts and strong, willing hands should go. But no one should enter upon the uncertain venture who can here find a steady, honest day's pay, for continued, honest day's work, unless he be the father of a large family, whose members he cannot reasonably hope to comfortably establish here; or the young man with endless longing for the wild adventures and untried risks of the frontier; or the young woman, strong in mind and body, cultured and self-reliant, who cannot here have chance and scope for the performance of woman's highest duties. Somewhere in that wide domain, they, and such as they, will surely find the needed home, the desired experience, and that "tide in affairs, which, taken at its flood, leads on to fortune."

THE RENOVATION OF PASTURES.

BY HON. H. R. ROBERTS OF ROLLINSTOWN.

Farming, like every other profession, if it is not susceptible of being made a paying business, will be avoided by men of thrift and enterprise. That there are many men of this class in this State who have left, and are every year leaving this employment for other avocations, in the belief that farming will not pay, is too plain to be denied.

Farming in Europe, from whence our ancestors came, and where it is carried on systematically, is a highly honorable and a lucrative business; and ought not we, before we condemn it as unprofitable, give the matter a fair trial?

Take the ground that farming is susceptible of great and paying improvements in this State at the present time. With this belief in view, I will devote the few moments allotted me in an examination of our pastures.

The complaint seems to be general throughout the State that our pastures are deteriorating, and the question is asked with much earnestness, how can they be renovated with a paying outlay? Let us look at the present condition of the pastures in this State, and see what ought to be done. A man may travel miles through what is called a good farming section, without seeing a single pasture even tolerably clear of bushes, moss, hassocks and surface water; indeed, it is difficult to find a single pasture not badly incumbered with some or all of these evils. There may be some portions of many pastures, I admit, which are pretty clear of these pests, but in a too large majority of the cases, the land has been cropped by planting and sowing to grain, till it will not bear feed enough to pay for fencing. May there not be some doubt about the good husbandry of cropping a piece

of land so long by planting and sowing it without dressing, that it will not pay for tilling, and then turning it out into the pasture? It seems to me that the exhaustion of the soil by planting potatoes one year and taking off a crop of grain the next, without any dressing save, perhaps, a spoonful of plaster, is not well understood by too many farmers; if it were, they would practice this suicidal way of farming less. I am clearly of the opinion that a crop of potatoes, succeeded by a crop of grain, would exhaust the soil more in the two years, than it would to feed it a half century.

Although there is vastly too much of the pasture land submerged in water, yet the pastures are very numerous in which a good supply of pure water is not easily accessible by the animals. I need not stop here to tell you that no pasture can be a good one which is deficient in this element. A pasture that has good water in any part of it will do well enough for stock that runs in it through the season, but for milch cows, or any stock which is taken out of the pasture every night, a good supply of sweet water ought to be always at hand in the enclosure where the animals are kept at night, or at or near the entrance of the pasture.

A moderate outlay, accompanied with a tolerable share of resolution and Yankee ingenuity, will, in a large majority of cases, furnish water for the stock, either in the pasture near the cattle entrance, or in the barn-yard. If the watering-place be a spring, it should be protected by a box or tub, well packed round with small stones, to prevent it from being made impure by the creatures when drinking. Or if it be a muddy brook or pond, it can usually be greatly improved at small expense by carting in small stones and making the soft place hard and clean, and at the same time ridding the farm or roadside of an unsightly nuisance; but if no water can be readily obtained near the entrance of the pasture, at the barn, or between the barn and the pasture, then a well should be dug, either at the barn or in the pasture, and supplied with an apparatus for drawing water, and a trough which should never be allowed to be destitute of water during the summer season, and it should be always kept clean.

Although water is indispensable for the sustenance of stock in the pasture, yet a superabundance of it in the position of surface water is one of the first things to be removed in the renovation of our pastures. It is useless to expect good feed when water is

so high the surface that clover, herbs, grass and red top will not thrive. Now the outlay in removing the surface water that would be justifiable must depend much upon circumstances. When pasturing is quite valuable, say worth ten dollars a cow for the season, when the land is so good when renovated that two acres will pasture a cow, when the descent of the grounds is such that the water, when unobstructed, would pass off readily, and where the water would pass through a four-inch pipe, the tile drain is the best, and in the end will be found the cheapest; but when a large amount of water is to be provided for, the cleaning out of the brooks, or the open drain is what is required. In other situations the bedding up of the land with the plow is what is most desirable, and in other places a simple furrow with the plow, when a larger outlay is not justifiable, will be found advantageous. In the renovation of all land, whether field or pasture, none is so cheap and none so desirable and durable as the removal of the surface water; and by surface water I do not mean water which passes over the land during, or immediately after, a rain, but water that is prevented from passing off by obstructions.

As most of the pastures in this State have more or less land better adapted to the growth of wood than of grass, I would encourage the growth of the former on all land overrun with bushes, which is too rocky, after all the rocks required for fence and for other purposes about the farm have been removed, to be plowed conveniently, and on all thin soiled land not well adapted to grazing. On all land set apart to the growth of wood, I would have the lines or boundaries as straight as possible. This can be done by a trifling outlay, if well attended to in the right season; and it will give the pasture a neat and an attractive appearance. What looks neater than a plot of woodland, particularly in a pasture, with boundaries as well defined as a corn field?

Now, having provided the stock of the farm with an abundance of pure water for their daily consumption, having made the fences safe, having removed the surface water and allotted portions of the pasture to the growth of wood, what shall be done to further improve the feeding land. In the first place set about in earnest removing all bushes and shrubs outside the boundaries allotted to woodland, and all trees, particularly evergreen trees, outside of these lines should be removed, except a few shade trees. Spreading juniper, a pest which is never allowed to grow in a well cultivated pasture, can be readily removed, when small

while the ground is frozen and free from snow, with a sharp bog hoe. A man can cut up several thousand of them, or small pines, in a day, when they are thick. Large ones may quite readily be taken out by the roots with a strong team by a grubbing iron made in the shape of the letter U, with the ends turned up so as to make hooks to fasten on to the roots of the shrubs, at the point where they spread out, or they can be pretty effectually destroyed by burning them in the spring, but in the latter case their roots would remain in the ground a long time and would be troublesome to plow amongst; barberry bushes, alders, when they grow in bunches, and, indeed, any kind of a tree or bush that will sprout out when cut down, had better be taken out by the roots on all land that does not need plowing. Hardhack or iron bushes can readily be pulled by hand when the ground is wet, and should not be suffered to have a home on natural pasture; and bulrushes, which occupy such a large portion, in many cases, of the very best of pasture land, can readily be removed with a sharp spade, and when rotted would make a fine ingredient for the compost heap, seem to hold possession as though they were the rightful owners of the soil. There is but little labor done on the farm which will afford such a satisfactory result as the extermination of shrubs, bushes, bulrushes and the like, on good natural grazing land. But on all land where shrubs, bushes, weeds or moss occupy the soil to the exclusion, in any considerable degree, of the grasses, the bushes should first be cut (for it is useless to attempt to destroy bushes by plowing without first cutting them, for when the tops are not turned under they will live), and then the land should be plowed. We are told by some cultivators of the pasture that the spike roller is just the thing to reinvigorate it, for it loosens the soil, and it will give new life and strength to the grasses; and by others that a sharp harrow, well weighted, is all that is required, for this will destroy the moss, give vigor to the grass and save the expense of plowing and reseedling. But neither of these plans meets the wants of the pasture, in my estimation.

We are told by high authority, no less than that of Prof. Gould, that pasture land should never be plowed; that may be the true policy in New York, but I am well established in the opinion, by forty years' observation, that when moss, weeds, bushes or foul grass root out the natural grasses, that plowing is the only safe and practical way to renovate this kind of land.

The plow not only destroys these enemies of the natural food for stock, but converts them into an excellent fertilizer for the new grasses. There is no need of recommending plowing in this State to any man who has given it a fair trial, as the best means of renovating this kind of land. I venture the opinion that there is not an observing man present who has noticed any recently plowed and reseeded pasture land, that has failed to see how closely it has been fed, and how readily the cattle, when turned into the pasture, make their way to the newly inverted sod land.

I know of no way in which the soil can so easily and so cheaply be improved as by plowing under the sward. The amount of fertilizing matter contained in an acre of rotted turf is very great. Plowing not only enriches, but it deepens the surface soil, thereby causing the roots of the grass to strike deeper into the ground, thus giving them a large range for food, which strengthens the grasses and enables them the better to withstand the drought, the great enemy of all plant food in New England. Plowing not only enriches the soil by causing the sward to rot, but it loosens and prepares the subsoil for the nourishment of grass, and for the sustenance of all kinds of plants, from the tiny moss to the noble oak. I have noticed for many years that trees grow more rapidly and always have a darker foliage on land which has been plowed than on land which has not been moved by the plowshare. How plainly observable it is on all railroads, that subsoil has the elements of plant food in an eminent degree. See how wonderfully grass, bushes and trees will grow by the side of an embankment made of ninety-nine parts of every one hundred of nothing but dead earth. Vegetation here seems to find its richest elements and appears to wonderfully defy the drought. Sand-slides from hills and mountains, though covered with dense forests, seem in a few brief years to recover their green appearance. The great White-Mountain slide, called the Willey slide, which seems but a few years ago to men of my age, has become so completely overgrown with trees as to be unrecognizable, and would have been passed by unnoticed by a party of gentlemen passing through the Crawford Notch, in an open carriage last summer, and who were paying particular attention to the landscape, had it not been pointed out by the intelligent and accommodating driver.

I prefer the months of August and September for plowing and reseeded pasture land, but if not convenient to do it in these months, take any time of the year when it can be done con-

veniently. No time is so bad as not to do it at all. No part of the farm will pay better for dressing than the pasture.

I plowed up and reseeded, about twenty years ago, a piece of dry, gravelly land; indeed, it was the driest piece of pasture land I have. It was completely overrun with sweet fern and iron bushes, and a greyish-colored moss, so that it produced but very little feed. On a part of the lot I applied at the rate of about one hundred bushels of leached ashes per acre. The bushes and moss on this part of the lot have not started near as much, and the feed has been decidedly better all of this time than on the other part of the lot treated in the same way precisely, with the exception of the ashes.

About fifteen years ago I plowed a piece of flat, cold pasture land, in beds. This was pretty well covered over with iron bushes, blueberry bushes, and withy shrubs. On a portion of this I applied at the rate of about seventy-five bushels of leached ashes per acre, with the same results as on the warmer and dryer land. After this length of time, the places on both pieces where the ashes were applied, were distinctly visible the first of December when the snow was three or four inches deep. The feed had been eaten down so closely on that part dressed with ashes, that but little grass could be seen, while on the other part the grass which had been allowed to go to seed was plainly visible. I have tried plaster the same way that I have ashes, but with no beneficial results.

I need not stop here to argue that stable manure would have as good results in pasture as in field, for no person who has noticed a piece of field land which had been well dressed, turned into pasturing, can have failed to see how closely it will be fed down, and how long it will be before it will be overrun with moss and bushes, and how green and flourishing the grass will look where the excrements of cattle are left.

I plowed up about two acres of plain land some twelve years ago, which was overrun with sweet fern bushes and weeds, and did nothing more to it, not even harrow it, except to watch the result. The bushes were pretty thoroughly killed. The land, where there was any strength of soil, has become well swarded over, and I am of the opinion that it produces three times as much feed as it did before plowing, and five times as much feed as it would have done if it had not been plowed. By this experiment and observations of land treated about as this was, I am forced to the conclusion

that pasture land, when the grass has become rooted out by bushes, moss or weeds, or killed out or enfeebled in any way, that plowing alone will greatly benefit it, and I think it not extravagant to estimate that the land will produce three times as much feed for ten years next succeeding the plowing as it would have done if it had not been turned over. I do not approve of this slovenly way of doing the thing. I would much prefer harrowing and rolling light land and dressing it, when it can be done, and reseeding it.

The use of lime, salt and plaster, as fertilizers, I leave to minds better trained in science and agriculture than mine to discuss. That the use of each of these is beneficial on some soils and in some localities, I do not doubt; but I do doubt the advantageous use of either of them on old soils and in all localities. These seem to be desirable fertilizers for pasture land, as they are cheap, but my advice is to try them carefully before expending much in their use. Superphosphate and guano are powerful fertilizers, but whether they can be advantageously used at present prices in reclaiming our pasture land is a question not well settled. Give them a cautious but fair trial.

Bone meal is an excellent fertilizer for worn-out pasture lands, and, I think, will compare favorably with any other commercial fertilizer for this purpose. Potash, an essential ingredient in a good pasture, and one which has been carried off in large quantities, especially by milk cows, and young cattle in the formation of bone, can readily be restored by this means. Mr. Joseph Kay of Dover, who has done more to renovate his pasture than any other farmer in the county of Strafford, whose pastures have come under my observation, informs me that this fertilizer is working admirably on his pasture, which is a clayey loam. He says when he applied it on the surface, in moderate quantities, on plowed and reseeded pasture land, that the feed was abundant the first year, while a portion of the lot, left designedly without any dressing at all, produced but very little grass. He has so much confidence in it that he is using a large quantity of it for this purpose.

As to the kinds of grass seed proper to be sown on pasture land, I am not so well advised as I should like to be. A much larger variety can be sown to advantage in pasture than in field, as we need feed in the pasture all of the season, while in the field we want to have grasses that will ripen about the same time of the year. I have been in the habit of sowing red clover, herds,

grass and red top; these grasses make the best of feed and will usually last until the natural pasture grasses take their place. Last year I added to these orchard grass and Kentucky blue grass, but have not yet had time to know whether the experiment will be of value or not. It is not unfrequently alleged, as an excuse for not reseeding pasture lands, that the cattle will destroy the young plant by treading on it and feeding it. That some of the plants may be destroyed in this way is undoubtedly true, but not enough to discourage the sowing, nor as much as it would to ripen the seed.

I have found that plowing a piece of warm, dry land as soon after haying as it can conveniently be done, and sowing it to winter rye, has worked admirably; it furnishes a bite for the cattle before the grass has started up much; and as it is fed down before it goes to seed, it will do but very little injury to the land. But by this I do not wish to be understood as encouraging turning stock in the pasture until the ground is well settled. The practice of turning cattle into the pasture to browse before the frost is out of the ground cannot be too severely condemned, and should never be resorted to except in extreme cases.

I am well convinced that the deterioration of the pasture land in the southern part of this State, especially in the counties of Rockingham and Strafford, is one of the most discouraging features in agriculture in this section. Let the pasture but be good, and every other part of the farm feels its life blood coursing through its veins from this source. When we take into consideration our dependence upon the pasture for the growth and perfection of our most useful domestic animals, and our daily sustenance derived from them, is it not strange that this bank of wealth from which such large dividends might be drawn, should receive so little attention? It is too often left to take care of itself. No credit is given it for the fertilizing matter taken from it to enrich the field. Is it not unaccountable that the cultivation of the pasture receives no more attention, when much of the labor necessary for its renovation can be performed at times that will not interfere with the other duties of the farm?

The Board of Agriculture are called upon by men from all parts of the State to exert their influence to prevent the tide of emigration from this commonwealth, and especially to prevent the abandonment of so many farms. There is no branch of farm-

ing doing so much at this time to diminish the population in the rural districts, as the deterioration of our pastures. That men who have yearly to repair fences around acres and tens of acres of pasture land, overrun with brake and brier, foul grass and bulrushes and bushes and surface water, and who have but a poor prospect of improving their stock after a hard winter, should wish to leave, even the old homestead, which was once so prosperous and remunerative, need not surprise any one.

All the other parts of the farm may be in good condition, yet if the pasture is poor and growing worse every year, it exerts a paralyzing and discouraging influence over the whole. On the other hand, if the pasturing be convenient, abundant and good, although all the other parts of the farm may be quite ordinary, the farmer is contented and prosperous, and such farms are never abandoned and seldom offered for sale. If I am correctly informed, there are more farms offered for sale in the lower tier of counties in this State than in the upper tier, especially on the Connecticut river water-shed, and I apprehend one great reason is because they have better pastures there. The land is undoubtedly better, and it is newer there than in the lower counties. But this is not all; they take better care of it, the portion of the pasture allotted to woodland is better laid out, and it is kept decidedly clearer of bushes.

I believe, and I think every sensible man in this State who has given any attention to the subject, believes that the cultivation of our pastures has not received that attention its importance demands.

I believe that the men who judiciously expend money in the renovation of their pastures, will be liberally rewarded.

I believe that labor expended in the improvement of the pasture will usually afford better satisfaction than labor expended elsewhere on the farm.

I believe that the renovation of the pasture is a very sure way to increase the income of the farm.

I believe that if the pastures of this State had received as much attention, and no more, it would have paid the owner liberally for the outlay, that there would have been vastly less farms for sale, and much less complaint against farming than there is at present.

REMARKS ON PASTURE RENOVATION.

BY J. F. LAWRENCE OF EPPING.

The amount of forage in the farmer's barn at the close of the hay harvest shows the fertility of his fields, if the conditions and elements have been uniform. A decided falling off in his hay crop arouses him to renewed exertion to make his fields more fertile and productive, and these exertions (sometimes spasmodic, it is true), have kept the fields of New England comparatively fertile, while the pastures have been depreciating all the while, until the same pasture barely *sustains* for the son one-half the stock it used to *fatten* for the father. It did not matter much how the young stock was wintered thirty or forty years ago, for they were sure to improve in the summer. From the fertile pastures they came out fat and sleek in autumn, though they were turned in, poor and rough, in spring.

Now, this is a serious matter to the farmer of New England; for however broad and rich his fields may be, he must have green pastures along side—one is necessary to the other, and both absolutely essential to maintain the equilibrium of the farm. When the farmer's pastures fail to sustain in summer the stock his fields have supported in winter, the profits upon his stock will end, and one of the most important sources of revenue is cut off.

This depreciation of our pastures has been the effect of a system calculated to produce the result above described. For more than a century we have pursued a system which has produced this state of things, viz: putting in our pastures all the stock they could sustain, and always, too, early in spring; raising stock for generations, whose growing bones have extracted the phosphates from the soil; producing milk, which extract the same elements in a still greater degree; withdrawing the cattle nights to the yards to increase the manure pile for the fields, at the expense of the pastures; plowing the high land and raising crops, almost always with no return of fertilizers, and too often without reseed-ing; never draining the low portions of the pastures, which are always the richest, and in times of drought, the best; and neglecting the bushes which oftentimes grow where, if eradicated, the best grass would be found. Is it a wonder that under this treatment the pastures *have* depreciated, and will they not soon be

valueless, unless a short corner is turned, and a different course pursued?

As a remedy I suggest simply sensible treatment, and returning payment for what is taken from them.

Bushes and old dead grasses should be removed early in spring. After a few warm days in spring, and before green grass has started, fire will run over the pastures in a sunny day, and kill the bushes; and though the pastures may look black for a few days, they will soon be green again. Though the amount of ashes from the grasses and scurf burned may not be large, it is valuable, and will enrich the soil, and the grass that springs up will be sweet and green, and will be fed off closely. The sun, sufficient to dry the grass enough for burning, will not have dried the underbrush in the woods, or the fences, enough to burn, and fire may be set with impunity almost anywhere.

Our stock is almost always turned into pastures too early in spring. At this time the land is liable to be poached up by their feet, and the grass roots killed by trampling, or pulled out of the yielding ground by the hungry mouths of feeding cattle.

If pasture lands are plowed and planted, does not justice to them, and the true interest of the owner alike, demand the return of the profit of the crop raised, and perhaps more, in the shape of plaster, bone, ashes, and especially of seed, as well as to keep the stock off this land until the grass roots are strongly set?

If too rocky to plow and reseed, an application of the fertilizers above alluded to, as soon as the snow is off, will show their effects in abundant green grass, especially if worked in with a harrow with sharp teeth, thickly set, and loaded with chains. A liberal application of bone will stop the cow from chewing bones, to supply herself with the phosphates her system demands, but which the old and exhausted pastures do not contain.

Nothing deteriorates a pasture faster than the raising of milk and young stock, for the milk extracts enormous amounts of phosphates from the soil, as also do the bones of growing animals; and the manure from such creatures is more valuable for the improvement of the pasture; for it is plain that the valuable portion of the food going to the growth of the animal, or the production of milk, cannot pass off in the manure, and is consequently just so much robbed from the pasture. Full grown oxen, and fattening cows, not giving milk, are probably the best stock for pastures, except sheep, because they have got their growth,

and their manure returns to the pasture nearly all the elements the feed producing it contained.

Sheep probably benefit a pasture most, because they eradicate much vile stuff; choose knolls for their resting places, where the manure is generally most needed, and distribute it most evenly. Their manure is fine and extremely valuable.

The three dry seasons previous to the last should have taught us to appreciate the value of the low lands in our pastures; for without these places the cattle must in many instances have perished for want of feed. Yet too many farmers regard these as merely waste portions of their pastures. These lands are the most valuable in the whole pasture, in their season, and if drained, and the scurf and coarse grass burned off in early spring, will sustain the stock oftentimes, when without this feed it would have to resort to the barn.

REMARKS ON THE SAME SUBJECT.

BY JAMES O. ADAMS, SECRETARY.

The great want of the New Hampshire farmer is good pasturage. It is so especially in the southern and middle districts of the State, while at the north the pastures are comparatively new and yield a greater amount of nutritious feed.

With bountiful pastures comes the ability to keep a large stock of domestic animals; with this large amount of live stock comes an increased quantity of dressing, which as a matter of course improves the arable land, produces a greater harvest from year to year, and all contribute to the more liberal compensation of the husbandman for his labors and his invested capital. Good pasturage seems to be the first requisite to successful farming in New Hampshire.

If hay is the king crop of New England, we must acknowledge that the product of our pastures should be its prime minister for its great importance as a coadjutor. In fact the pasture may justly be regarded as the most potent of the two, and hold the greater sway, for the cost of the hay consumed during a season is vastly greater than the pasturage required for the residue of the year, and if pasturage were entirely wanting the expense of supporting

our stock, especially our sheep, young animals and those fitting for beef, would be far too expensive.

We may manage to get our flocks and herds through the winter, by various methods of supplementing the hay harvest; we may, in fact, stint our animals so that leanness comes upon them, but if we can in season find a rich hill pasture for their grazing, they soon recover the winter's loss. But deprive them of their summer feed, and send them poor and gaunt to their winter quarters, and they will scarce regain their healthy condition until spring feed shall come again. All animals need green food. The horse may live without it, but he is apt in time to lose the vitality of his nature, and sometimes becomes diseased, unless he can have free access now and then to the soil, and feed from green products. Cattle will not thrive without it. Sheep only prove profitable when turned upon the hilly pastures, or on fresh clover fields.

If the meat produced per acre on any farm is the measure of its value, as is the fact on English farms, how can a farm be regarded as superior without a first class pasture?

The attention of farmers has been turned to this matter, and they have become anxious to learn what means they can adopt to accomplish the much desired object of renovation of pastures. If the droughts of former years caused the roots to penetrate deeper, and the soil thereby to be made more porous, as is sometimes maintained, the rains of the last season and deep snows and generous showers of the present, have sent moisture down deeper, and if by capillary attraction chemical agencies have been brought into action, why may we not hope for these beneficial influences on pasture land as well as in the cultivated field? But the possessor of impoverished pastures must not rely on these agencies, for they will not accomplish the object he so much desires. What then can he do?

I will not attempt to dictate, for no positive rule can be given adapted to all localities and all varieties of soil. I can suggest, and my suggestions may lead to practical results.

I would abandon large areas of rough and rocky lands, that are remote from markets and means of transportation, to the growth of wood. Though God made us to toil, he never intended that we should waste our energies in vainly striving to reduce barren wastes and craggy eminences to a state of fertility.

Wood is fast disappearing, and not many years will pass before our forests will be swept away, and a serious want of wood will be felt. It will be necessary then to devote much of our soil to a new growth. Those who begin now will, in a quarter of a century, have a rich inheritance which they will be proud to bequeath to a succeeding generation. They will possess richest gain through the single agency that I now urge you to adopt.

To make up for the deficiency which the appropriation of so much feeding area to wood growth will occasion, we must add the roughest sections of our fields, and those difficult of culture, to our pastures. We must, in brief, cultivate less, but better, and appropriate to the hoe only those fields which are of easy culture, accessible to railroad communication, and near compensating markets.

Without attempting to carry out in detail the course to be pursued, I give such hints in regard to this branch of the subject as you have now heard, and urge you to develop the plan and carry it into practice.

Plowing is another agency to be employed, when the nature of the soil will admit. I know it is said that old pastures, with a variety of grasses, are best; but when those grasses grow thin and fail, they must be renewed by such means as the owner can command. He can often do this by plowing, raising a crop of potatoes and reseeding; or, omitting the intermediate crop, apply a dressing and seed down at once, and secure greatly improved feed. It must be remembered that in seeding for pasture a variety of seeds should be applied, so as to produce a succession of herbage for the grazing herds.

Rotation may be applied to pasture ground as well as to other lands. In adopting a system of rotation, let pastures be included to such a degree as is practicable.

A division of pastures is often found to be advantageous, and though subjecting the owner to expense in fencing, it will repay in the extra feed which is gained in withholding the stock for a time from one section, and then from another. The objection sometimes urged to this practice is that a change is noticed unfavorable in butter dairies, the manufactured product changing taste and color with the change in feed. Except for milch cows and those for butter purposes alone, there is no real objection.

Top-dressing with ashes, bone-dust, plaster, the phosphates, will produce marked effects, and when the grass roots are good is the

most economical method of treatment. These substances supply, in a great measure, elements taken from the soil by the sale of milk and stock furnished by these pastures.

A good man who received more ridicule than he merited, among other things which "he knew about farming," said the man who owned the broadest extent of pasture land suffered the greatest curse. He may have had in view the cost of fencing, but most likely he based his remarks on the fact that he believed in soiling rather than in pasturing. Though I cannot assent to his broad doctrine, I am certain that in many localities soiling is really the system to be practiced. It requires less land, saves the manure and affords a greater sustenance in less time, allowing animals the opportunity to rest and lay on fatness.

Underdraining, or in case that is too expensive, open drains, will contribute greatly to the banishment of wild grasses and the introduction of the more nutritious varieties.

The importance of removing bushes, vines and all superfluous growth, has been so fully discussed by others as to need no further mention. But we might express our disapprobation of the practice of turning stock too early into pastures and of overstocking, in the great greed for gain.

It has been already remarked that sheep benefit pastures more than they injure them, and that they even restore them when impaired by the grazing of other stock. The Chinese have a maxim that sheep have golden feet and that they cause a harvest of gold wherever they tread. The testimony which has been given here to-day tends to the conviction that the maxim may apply to our flocks and our pastures, as well as to those of the Celestial Empire.

Above all other means let the owner of impoverished pastures exercise his intellect to devise means for their restoration, for he must have them if he would be successful as the grower of stock.

FRUIT CULTURE.

We have not made a specialty of preparing papers on the important subject of fruit growing, but in addition to the report of the exhibition, made at our first meeting the past year, we present the remarks made by several gentlemen as they were subsequently written out by the speakers.

REMARKS ON FRUIT CULTURE.

BY S. F. LEARNARD OF CHESTER.

The importance of the cultivation of fruit is not fully realized by the farmers of New Hampshire; they do not take into consideration how much their farms are increased in value by having a well-arranged fruit garden and good orchard. We know of several farms that would not sell for more than half their present value if shorn of their orchards, and we think, aside from a pecuniary point of view, it pays by the influence it has upon the family, the community in which we live, and the commonwealth.

The sons and daughters each have their favorite trees, each becomes interested in the adornment of the homestead, and all this strengthens the love of home and harmony among its members. The community is influenced by the beauty and pleasure derived from beholding the fruits in their season, and we think the more the people of New Hampshire give attention to this matter the more their sons and daughters will become attached to their State, and if they leave her to settle in other states the better influence will they exert.

LOCATION AND PLANTING OF ORCHARDS.

If possible, we would select a piece of land large enough for small fruits and apple orchard together, and near the house; would set the peach, cherry, plum and pear so that they may be seen from the house, and thus be protected and add beauty to the estate; then set summer and fall apples, Williams' Early Red, August Sweet, Porter, Gravenstein, or any varieties to suit the taste of the owner, having them so arranged as to give the best effect to the looks of the estate, and so add to its value. We should then set Hubbardston Nonsuch, Baldwin, Rhode Island Greening and Russet, each variety in rows by themselves, as Russets need a better soil and more care than most other kinds of trees. We prefer but few varieties in the main orchard, giving the Baldwins the preference for profit.

We have set trees twenty, twenty-five, thirty and forty feet apart, and from our experience prefer forty feet one way and thirty the other, the widest space the way that will let in the sun between the rows, thus enabling us to cultivate whatever crops we wish while the trees are growing, and when grown so as to interlace on the sides thirty feet apart, ladders can be moved and teams driven in the forty feet space. This we have tried and are satisfied with the result.

We set an orchard in this way in 1859; the land was in grass, in fair condition, cutting one ton to the acre; we marked out the rows forty feet one way, then, with two yoke of oxen and plow, turned four furrows each way, then went through the centre or dead furrow twice with the plow, disturbing the sub-soil as much as possible; filled the furrow up with the sods turned grass down, sufficient to make a good bed to set the trees on, twenty-five feet apart in these rows, but thirty feet is better in a rich soil. We set trees three years from the bud, plowed and planted the land with beans and potatoes, dugged in the hill, with the exception of two years when it was in clover. When the trees had been set eleven years they averaged two barrels each; the thirteenth year, three barrels.

We should prefer a field that had been well tilled two years on which to set an orchard, using the plow the same year, and filling in with the best soil to set the trees on, and set the best trees to be had in the market.

PICKING AND CARE OF APPLES.

If we market our apples in the fall, we pick carefully from the trees, place the barrels, well cleaned, in the centre of a square of four trees, turn the apples on the grass or a mat, sort and pack for market. If we put them in the cellar, we prefer putting them in bins, five feet wide and as long as convenient, and after being in the cellar a few weeks, cover with hay caps or something of the kind, to keep them from wilting. In this way we can see how they are keeping, and when we have a customer can easily show our goods.

REMARKS ON FRUIT CULTURE.

BY WARREN BROWN OF HAMPTON FALLS.

Twenty years ago the farmers in our section of the State were enthusiastic on the subject of fruit growing. Every farm set out its young orchard. The old trees were grafted with the varieties which were popular in the market. It was predicted that apples would in a few years become so plenty that there would be no sale for them, from an overstock in the market. The reality has not shown these predictions correct; apples are scarce and bear a much higher price than at that time.

Hard winters, blight, the ravages of insects, have done the work, and in most cases have been too much for the trees. Many have dug up their orchards and are using the land for other purposes. This section, once noted for its abundance of apples, now affords only a scanty supply for home use. Three neighboring farms which in 1855 sent 2,600 barrels to market, raise not enough for family use. Most of the trees have been removed. Those who neglected their orchards have fared better than those who carefully tended and manured, to the expense of the remainder of the farm. All have failed to secure paying crops, and have abandoned the business in disgust.

Formerly a farm with a good orchard found a ready sale from this fact alone. Now, with a guarantee of fruit enough for home use, a farm would bring as much as one liberally supplied with orcharding. The failure of the apple crop has been a sad disap-

pointment to our farmers, who were making great dependence upon it as a cash crop. Could we raise such crops of apples as formerly, much less discontent would show itself among our farmers. Had every apple tree in this region been rooted out ten years ago we should probably have been better off to-day. Our courage was then good. Young orchards would have been planted and cared for. There would not have been anything for the canker worms to subsist on. We should be raising good crops of apples now. As it is, few new trees have been planted. The most of those we have are ruined. Our courage is gone. Upon the return of favorable seasons we shall not be in condition to profit by them.

The canker worm has been about here for ten years. Some have fought them with the various preventives, and have achieved temporary success. In order to stop their ravages the community must be united in their labors for that end. If a few neglect to do anything the wind will carry them to the orchards of the more careful, who have killed those generated upon their own trees. This renders the task hopeless and discouraging, and it is soon given up in despair. When canker worms appear in an orchard no time should be lost in commencing a warfare on them, as they are much more easily subdued before becoming numerous. A late frost is sure death to them. Two former visitations were disposed of in this way, once in 1798, again in 1835. If we are to raise apples something of this kind must happen again.

From my own experience I am satisfied that pear culture may be successfully and profitably engaged in. They bring a good price. An acre of pears, in bearing, will yield a large income. The insects which molest the apple do not prey upon the pear. In pear culture judicious cultivation and manuring cannot be carried too far. Any one who has been successful in this branch will bear me out in these statements. Heavy dressings of animal manure should not be too frequent, as it tends to wood, but used in connection with bone, ashes, horn piths, and shavings or the sweepings of the blacksmith shop, pear trees cannot fail to do well.

Having set out pear trees every year for fifteen years, I am satisfied that there are, so to speak, good and bad breeds of trees. Many will not grow at all. Do not believe any one will ever become successful who depends on tree peddlers for a supply. My experience has been that the trees they bring are of inferior

quality, not true to name, and are in poor condition when they reach us. I purchased a lot of trees the present season from a nursery recommended by Hon. Marshall P. Wilder, which have proved very satisfactory. Many of them have grown a foot, one having made a growth of two feet. When we set them out the roots and tops were severely cut back, which I think is a great benefit in setting any kind of fruit trees. Where all the wood is left on it is as much as the tree can do to hold its own, to say nothing of making any growth. I am satisfied that fruit-growing may be made profitable in this State, by selecting such kinds as are adapted to each locality, if a proper amount of knowledge is brought into requisition.

REMARKS ON THE SAME SUBJECT.

BY H. W. HERRICK OF MANCHESTER.

The call that has been made on me for a few words on apple culture has, I fear, arisen more from my interest in the subject than from any practical knowledge of it. But in listening to the discussion, it has occurred to me that obstacles to success in fruit raising are made too prominent, while we fail to remember that there are countervailing advantages.

In the great change in our agriculture during the past twenty years, farmers find themselves forced from necessity to turn their attention to special crops—articles of farm produce that will find a ready cash sale in our home market. So great is the necessity for cash capital to purchase improved implements, fertilizers, improved live stock, and for family expenses, that the old system of raising produce in variety, to be all consumed on the farm, will no longer answer the demands of a wise and progressive farmer. The great agricultural districts of the West are all devoted to special farming, and the more this system is developed the greater the necessity for us to find what crops our climate and soil are best suited to, and thus give our energies their proper direction.

It is said that with our soil of granite formation we can never compete in apple culture with Vermont, New York and other states having limestone soils. True, limestone districts are best, but our deficiency in this respect can be supplied cheaply by a

small application of lime each year. Besides, we have a compensation in the fact that in our granite soil we have a general and wide diffusion of iron, in various combinations, and wherever iron abounds we find fruit trees of all kinds have great vigor of constitution, and with suitable culture a tendency to regular fruitage.

Insects constitute another difficulty in our orchards; but let it be remembered that our troubles from this source are shared in common by orchardists everywhere, the evil becoming greater as we proceed from the northern to the southern fruit districts. This evil can be combated successfully by vigilance and knowledge, and if farmers in the same neighborhood will combine their efforts, fruit-destroying insects can be nearly or quite exterminated from our orchards. No fruit districts in the world are more troubled by insects than the grape-raising parts of France, and yet the intelligence and activity of the Frenchman conquers, and to this day his vineyards are the best and most prolific in the world. Our difficulties from insects are not so great as are found in France, and shall it be said that the Yankee is not equal to the Frenchman in contending with this evil?

Again, it is said that our apple trees will bear, generally, only in alternate years. While this is true in most localities, and of many varieties of apples, there are exceptional cases; and these go to show that this biennial fruitage is due to some fault in locating the trees, or deficiency in fertilizing material, or bad pruning and careless treatment. In some parts of the West apple trees, with good culture, bear good crops every year; and as a rule, the pear, even in New Hampshire, gives a crop annually. If this barrenness is due to improper treatment rather than to the constitution of the tree, it can be overcome. My own theory as to the principal cause of this trouble is, that in pruning young trees too much wood is cut from the lower branches, and the upright highest twigs drawing the ascending sap with the greatest power give the young tree a wood-forming habit and leave too little vitality for the fruit spurs below.

Many apple trees, especially in our small gardens, are pruned as though they were elms, and as a consequence the fruit spurs have very little vigor. It is said by some experienced orchardists that blossoms cut from a very young tree in a year of plenty will render it fruitful in the following year of scarcity, and that when the habit of bearing is thus once established it will be permanent; but I think our remedy for this evil of biennial bearing will be

found to be in a correct system of pruning, underdraining and liberal culture. Then we may look for a good crop yearly.

Another discouragement is the long time necessary to bring our young trees to maturity or bearing condition. In the fertile West an apple tree is as large with eight years' growth as our average orchard trees are at the end of sixteen. Generous culture is in part our remedy for this, while for the rest we must remember that our slower growth gives a more compact fibre to the wood, and a greater age to the tree. It also insures better keeping qualities to the fruit, and some good judges think produces a better flavor.

In the belt of country bounded north by the St. Lawrence river and south by the southern borders of the Middle States, extending from the Atlantic to the Pacific, we have the great fruit producing region of this continent. New Hampshire holds a favorable position in this region, and for apple raising can successfully compete with her neighbors. Our hills give on almost every farm protection from cold winds, and with proper drainage the soil can be warmed to mature both wood and fruit. In our short seasons for growth we may not be able to compete with the South in early fruits for our home markets, but in late keeping winter fruits, New England has an advantage. The demand for export, for our winter apples, from January to April, will generally insure us from sixty cents to one dollar a bushel for our Baldwins and Russets, but the home demand often brings the price up to double this amount.

No apples can compete with ours in the early spring sales in the London fruit markets. The fastidious cockney passes by his native fruit from the great orchards in the west of England, and thinks himself happy in securing a barrel of our superior flavored winter apples. These varieties should never be judged until they have been packed at least two months, and three or four months would give better results in the increased richness of their flavor.

Our policy, then, should be, when raising apples on a large scale, to secure the late keeping table fruits; and if this is made a specialty by our farmers, it will surely give, ultimately, satisfactory results.

CHANGE OF BASE IN FARMING.

BY WM. D. LOCKE OF NEW IPSWICH.

Are we content with the present state of our farms? When the ingathering harvests are completed, and we look over our stores, are we satisfied? Does the surplus of our granaries and the increase of our flocks and herds suffice to pay our taxes and our prudent but necessary annual bills? Are the mass of farmers in these rural towns "above board," and if so, have they become so by simply farming, or by some side issue of lumbering, jobbing or speculation? In short, has the system principally followed the last fifty years improved or impoverished the soil?

It seems to me the negative is plain, and that your universal response will be, the sum total of hay and grain, of butter, beef and pork, produced in this and the adjacent towns, is less to-day than forty years ago. And what of our pastures, once so fragrant with honeysuckle, and the sweet and tender grasses? What of the noble pines, and waving forests that mantled these circling hills fifty years ago, hills now bleak and barren, almost as a December rock?

Locations differ. Farms on these high lands around the base of Monadnock, in depth of soil, and continued condition for fertility, differ widely from the meadow and intervalle lands of the fertilizing Connecticut and its tributaries. Hence I shall be understood as referring to the former in my remarks on this occasion. If, then, the past has been so near a failure, is it not pertinent to inquire *how* shall we conduct the future? And this leads me to the subject proposed. *The necessity of change of base in farming.*

First, then, the "golden rule" of farming, "what is worth doing at all, is worth *well* doing." No change of base, or

improved farming tools, will relieve the brain or the muscles of diligent, yes, often severe, application. The farmer must *think*, *work*.

But what changes are necessary? That is the question so hard to solve. I can only suggest a few things, learned by study and observation — things that may be more or less familiar to all, but being brought up in this way, may serve to freshen the memory and prepare our minds for discussion. It is often far easier to find fault with what has been done than to tell and do what ought to be done.

Fifty years ago almost every farmer had a surplus of produce for market, after laying by what he was supposed to need for the support of his family; and families in those days were uniformly larger than at present. This surplus was usually in the form of pork, butter, cheese, beef or live stock, eggs and sometimes grain, oats, perhaps, and corn on some of the best farms. Corn was usually consumed in the vicinity of its growth, and oats found a ready market at the old taverns, which were numerous in those days, as “provender” for the sturdy team horses, and the nimbler steeds of the passing traveller; but the pork and products of the dairy went to Boston in exchange for money, salt and groceries.

How many before me can remember, as commenced the cold of autumn and the snows of winter, the caravans of wagons and sleighs that passed down the street by yonder monument, on their way from upper New Hampshire and Vermont, to Boston, freighted with frozen porkers, tubs of butter and lard, and piles of “four-meal cheese,” not unusually harder than the “nether mill-stone.” And joining these caravans were our townsmen and neighbors on every side. How well we remember the annual task imposed on the boy of twelve to fifteen, of taking care of a stock of fifteen cattle for five days, and the short days of December, too; and going a mile and a half to school, there in season, prompt to learn, “through by daylight,” as no lantern could be carried to the barn by the boys. All this, while the father went to Boston with his accustomed load.

How was it? The farming lands were then comparatively new. They produced more, and with less labor, too. The surface soil was well supplied with a rich mould, the accumulation of ages. But the depth of soil so supplied was not great, especially on these hill-sides. Our fathers never dreamed of “exhaustion of

soil," and we have done little more than dream. But annually they were exporting the very life-giving elements of fertility.

Few of these teams of transport brought back anything to replace in the soil the lime, phosphoric acid, potash and soda they had carried away. Most of them might have on board a limited amount of soda in the form of salt, and sometimes in the form of plaster. Nor was this all the mistake made. The ashes were sold for potash, and from ignorance and neglect, the manure heap lost much of its fertilizing power. I need not dwell on these mistakes, much less find fault. We are not innocent, even now, with all our experience, of their exhausting system. Very slow are we to learn the "law of compensation."

Yet, brother farmers, we are not altogether stupid, but a trifle in the dark. If the past or present system of farming is depreciating the productiveness of our lands, is not "a change of base" imperatively necessary? From the fact that it did not occur to us that we were exhausting the soil of its fertilizing elements, we have not been inquiring how to restore those elements. It seems to me our first work is to study the "law of compensation." No soil can be productive if deficient in either lime, potash, soda or phosphoric acid. Different crops require different proportions of these elements; contiguous fields often have different proportions. Hence, it is important to know which of these the crop requires that we propose to raise, and in which the land may be deficient, so as to know precisely what to apply to secure the crop desired. Chemistry is supposed to determine these points, but farmers are not often chemists. Hence they must work in nature's laboratory, and use vegetable tests instead of chemical agents. They must study, observe, experiment — experiment, observe, study. It is often a slow process, and may have to be done by the "sweat of the face;" nevertheless, it is a most worthy effort, and will ennoble the man who sets himself seriously about the solution of so desirable a problem.

If, then, my position is true, that in the past we have sponged the life-elements from our lands, I am conscious of only two ways for the future. Either continue the depleting process till we are "starved out," or change our base and restore to the soil the plant-food essential to its fertility. Can it be done? I firmly believe it can, and that ordinary farmers, with a few hints, can begin at once, with fair prospect of success. The process of

exhaustion has been slow—little by little; let us reverse the process and restore little by little. We may not be able to do it in haste; the outlay would make us bankrupts. We may need to check the Yankee impulse. “make haste,” and patiently wait for desired results.

On a farm in Fitzwilliam, forty years ago, the owner was planting his acre of corn year after year, for ten or twelve years, on the same field. It was a sandy loam, and he preferred hoeing there to hoeing on tougher ground, and so he kept on till corn would not grow. Had he given the field the right kind of food, in full amount, he might have kept on growing corn there. A half-acre field near the centre of New Ipswich was planted with corn eight years in succession, I think, and increased in product year by year. The owner had access to several vaults, and dressed his field with solid and liquid night soil, always rich in plant food.

Suppose, now, by a crop of wheat we remove twenty-five pounds of phosphate of lime from a certain field, let us return to it fifty pounds of good mercantile superphosphates. If by a crop of potatoes we remove twenty pounds of potash and twelve of soda, let us carefully return or leave to decay the tops which contain the most of the potash and soda, or dress it with thirty or forty pounds of bones dissolved in ashes, and as many pounds of common salt, the base of which is soda. The tubers contain mostly starch and sugar, with water; these elements are principally drawn from the nitrogen of the air. So, then, if we know what mineral elements have been removed, we know what to restore. We are often irresolute about doing, from the consideration that we are not *quite* sure we are right. And another thing disheartens us—it is going to take *so long*. And yet another thing has a powerful influence—where shall we get the pure article? A part of it is always near and ready, when we learn the fact. Save ashes as you would gold dust, they have *more value* for plants. They operate long in the soil. It takes ninety per cent. of water to completely solve what is soluble in them. Think of it, ninety pounds of water to solve one pound of ashes. So when in the ground, even, the process goes on slowly from year to year, for the want of water in contact with them. Do not be discouraged, then, if you do not see all you expected of them in *one* or *five* years. They are a safe investment. Save bones, too; they are of more value for agriculture than precious

stones, and when farmers understand how, as they eventually will, to reduce them to plant food without loss, their high value will be apparent.

There are many ways of restoring to our farms fertilizing materials that have been neglected heretofore and have gone to waste. I have not time to dwell upon the point. It must be a *study* with all who would increase their crops. Not only our plow lands, but hay-producing low lands, too moist for the plow, need attention. The natural grasses on them are running out, and weeds are rapidly coming in. How few of these lands are ever top dressed. In some towns, on the line of railroads, milk is raised for market. To increase the flow of milk, oil meal, cotton seed, corn meal and shorts of wheat, etc., are liberally used. The manure from cows thus fed is much richer than when fed on grass or hay alone. Follow up such a course and it will do much toward restoring worn lands, if the manure and waste arising be judiciously saved and applied.

The farming prospects would be far more flattering if our *pastures* were as good as formerly. What shall we do with them? This question has often been raised, but not as often solved. Sheep would benefit some of them, but of others it is hard to decide. Of one thing I am sure, if left to themselves they will soon be clothed with forests. And why not let them have their way, retaining for pasturage only such as may be more or less improved? This disposition in our rough and barren lands to return so speedily to the forest state, seems surprising, and yet is it not a wise provision? The growth of a wood crop upon them may be a great blessing to somebody fifty years hence, while their product as pastures would not pay the taxes and interest of money and cost of keeping down the brush. On this very topic of cherishing and planting forests, instead of slaughtering, as at present, a change of base is certainly desirable, if we look to the interests of our children. The all-devouring axe must cease its ravages, or the "coming man" suffer loss far more than our avarice secures gain. There are many who look upon the destruction of these noble old forests with painful regret! But like the "red man," they seem doomed to pass away. Shall we not cherish their memory by planting new and vigorous forests to court the cool breezes in summer's sultry heat, pamper the little rills that feed our brooklets, and invite refreshing showers from the misty clouds that love to hang over the leafy woodlands?

But I must pass on to another branch of my subject — that of *help* in farming. There was one “good old way” in which our fathers excelled, the rearing of a generous family of boys and girls. Ask our school rooms if those were not jolly days. What a change, and the few now coming up to their majority have their minds fixed to leave, the day their freedom arrives. I do not say this to blame them. The world may be better if they go. But how fill their places in the manual operations of the farm? Manifestly by “labor-saving” tools and machinery. The late war, by calling away so much strength, compelled farmers to procure more and better tools. One-horse mowers and wheel rakes were strangers then, now they are every farmer’s right-hand man. The genius of improvement is yet onward! The call for labor-saving machinery on our farms has stimulated the inventor, and mechanics vie with each other in bringing out the best article. It will be wise to resort to all such helps, as soon as we have proof of their value.

The best method of securing our crops after growth, demands careful consideration and study, and in particular our hay crop. What anxious, toilsome days have those of haying been. Is there a better way? Have we spent too much time in drying our hay? Many able, practical men, take the ground that we have. Let us examine the subject. These men assert that grass in blossom, cut after the wet or dew is off and stirred with a tedder, or by other process, twice before one o’clock P. M., on a good, sunny day, may then be speedily raked and carted, and solidly packed to the amount of several tons in one pile, and will so cure in the mow as to open bright and fragrant, without must or smoke. If it is so, much valuable time and work can be saved. But this is so contrary to all experience and practice of the past that it prompts us to reply, “It cannot be.” Some four years since I saw a statement that three or four hours’ sun upon grass, after all the water was out, except that in the sap, would cure it so that it might be packed in a barrel or tight box, and it would keep well; that it had been repeatedly tried by responsible men. The statement, however, seemed incredible. At the late farmers’ meeting at Manchester the subject was more fully discussed than I had ever heard it before. Let me quote a little from the minutes of that meeting, as reported by the Secretary of the Board of Agriculture:

"The theme of John Johnson, Esq., of Framingham, Mass., — a practical, careful, and progressive farmer — was grass and hay. He advocated cutting the hay just before the blossom. He related his method of curing the grass. He cuts with a mower after the dew is off, puts the tedder at work from ten to twelve o'clock, and at one begins to get in, but stops by four and a half o'clock before any dew is deposited, and has sweet hay, which is nutritious and readily eaten by stock. This he was positive in stating, and though roughly assailed for his statements, he reaffirmed them, and was sustained by several who knew his practice. Mr. Humphrey, President of our Board of Agriculture, said he believed Mr. Johnson's statements, and in his own barns had twenty-five tons of hay cured mainly the same way."

Mr. Wetherell, of the *Boston Cultivator*, and other responsible and prominent men, maintained that Mr. Johnson was right. But still there were good, practical farmers, skeptical. It was admitted that the hay would heat, and by one advocate that he had found mushrooms on the top, but only in a thin layer. The rest was all bright and sweet. It was also admitted that putting in a part, and a few days later placing more on the top of it, there would be spoiled hay between. The question was asked, "If there is heat, fermentation, is there not a loss of sugar, or starch, or both?" But the question remained unanswered. Fermentation has been held to be the first stage of putrefaction. When the grass is cut, the vital principle of life and organization which held the balance between destructive elements ceases, and decomposition results. More especially is this true, if water is present, and a certain degree of temperature. The theory has been that to prevent fermentation, the water in the sap of the grass must be expelled by drying, till the residue was in a syrup state, which resists decomposition or fermentation till water is added, or it is attacked by the gastric juice in the process of mastication and digestion.

Now, then, I presume that forty-nine out of fifty of the practical farmers before me will say, "If the new way is the right way then it is a mystery, and we still prefer the 'good old way.'" But within a few days I have seen a statement in the "Youths' Companion" that may lead to a solution of the new theory that hay may be kept sweet and fragrant and nutritious without more than three or four hours of drying sunshine.

Speaking of epidemics, the writer goes on to say "that it was formerly believed that these diseases, epidemics, were communicated by malaria, or matter in decay. A little being received

into the body, spreads itself, or rather its decay, just as leaven spreads its influence indefinitely through a quantity of flour. In 1836 a yeast plant was discovered, which acts in the same way as ordinary yeast, and thus shows that fermentation is a product of life instead of a process of decay. In connection with this it was further discovered that putrefaction, or the decaying process, does not take place when the air is excluded, or when only burnt air is supplied. (The spores or air seeds are killed by heat.) This shows, also, that fermentation is caused by living organisms, which find their food in the substance which is said to ferment, and causes a chemical change in it by their multiplication."

Now for the conclusion: If fermentation in the hay mow is the result of the loose or open condition of the mass, admitting the circulation of air floating these spores, or eggs of living organism, so they may instinctively, parasite-like, attach themselves to their native resources for reproduction, then we shall see how that packing hay in a cask or on a mow so tight as to exclude the air may be a safe process. More light is needed and more is expected. I have dwelt on this method of curing hay because so great interests are involved in its ultimate solution. Experiments may be made on a small scale by every farmer. If hay can be as safely made in three hours as in six or more, then we ought to be glad that the fact can be established.

If in other professions "knowledge is power," it is emphatically so with the farmer. Ignorance more than idleness has wrought mischief on our farms. I do not mean to underrate the intelligence that has followed the plow—we may rather feel proud of it. But I do feel that science has not done for farmers what it has done for almost every other calling. England has solved the problem of rotation of crops, has found that American bones enrich her lands, has gone steadily forward in the improvement of her soil, has long practiced the law of compensation, and to-day her lands teem with generous harvests. Her working men and women will not compare with ours in general knowledge, but her landholders are ahead of us in the true art of agricultural progress.

The establishment of agricultural colleges in so many of our states indicates that Americans do not intend to be long in the background in theories of farming. It shows the drift of public sentiment, and that there is an impression that much more light is needed on the subject of husbandry.

It has long been my impression that something more should be done in our common schools looking towards the future employments of our children. Three-fifths of those who live to maturity will probably follow agricultural pursuits. Why not adapt their studies more to their coming occupations? In the present state of the public mind it may not be easy to say just how the work is to be done, but when we all see the necessity of doing something, something will be done!

SHEEP HUSBANDRY.

It was expected that this department would be occupied by the valuable paper of Dr. Kingsbury on this subject. But inasmuch as he withholds it for revision, we give brief remarks that at different places followed its delivery.

REMARKS ON SHEEP HUSBANDRY.

BY SAMUEL FLINT OF LYME.

I am glad the subject for discussion this afternoon is sheep-husbandry and wool-growing. This is the place, above all others in the State, to talk on sheep-husbandry. It is the very "head-centre" of the business. No other town in New Hampshire has had for a long series of years so many sheep as Lyme, though Walpole has been a competing town, and has occasionally had a greater number, having in 1868 fifteen thousand seven hundred and four, when Lyme had only twelve thousand and ninety. But in two years Walpole lost six thousand four hundred and eighty-five in number, and Lyme lost only two thousand eight hundred and seventy-five; so that in 1870 the former town had only four sheep the most. But if Walpole had a trifling advantage in numbers, Lyme had the most wool by twelve thousand, five hundred and sixty-seven pounds; the fleeces averaging five pounds, nine ounces; while in Walpole the average was four pounds, three ounces, giving to Lyme an excess of one pound six ounces per fleece. So in the valuation of sheep for taxation, in 1868 (the last report I have), the sheep in Lyme were valued at \$3.75 each, and in Walpole at \$2.74, a difference of one hundred and one cents per head in favor of sheep in Lyme.

For thirty years the farmers in this town have made wool-growing their principal business. Some of them have taken great pains to improve their flocks, and we have had our full share of fancy-sheep breeders. They have sold their sheep and lambs at fancy prices; but I could never learn that they sold their wool much higher than their neighbors. I find in all of these fancy flocks there are some poor lambs. Sometimes, when sheep were very low, and but little sale for them, I have bought lambs from these flocks, turned them in with mine, and kept them alike; and there was never so much difference that I could tell them from the others, except by their marks. I believe your fancy sheep are made by fancy keeping; that you may take any flock, and with extra feed, selling the poorest yearly and keeping the best, in time you will have an extra flock. Or, you may take the best flock in the State, and by neglect, exposure and hard fare, reduce it in a short time to an ordinary condition.

The gentleman from Orford says "blood tells." I want to explode this notion about the blood. I say bones tell. [Here some one inquired "what do bones tell without the blood?"] They tell what the sheep *was*. You may take a drop of blood from Mr. Hammond's thousand-dollar "gold-drop," and another drop from some scrub sheep in a common flock, and let a physiologist examine them both under a microscope and the only difference he will be able to discover is simply that the scrub sheep will have the most healthy blood. I believe some of these fancy sheep have been coddled and cosseted, subjected to a sort of hot-house culture, till their constitutions are seriously impaired. I have had a buck in my flock that was bought in Vermont, when a lamb, for one hundred dollars, and his stock was not as good as I obtained from another buck, bought in this town, at the same age, for ten dollars.

Go to one of your fancy sheep-breeders, and he will ask perhaps two or three hundred dollars for a buck. Tell him you can get what you consider a very good buck for twenty or thirty dollars, and that his buck can't be worth ten times as much for the purposes of stock-raising and wool-growing; and he begins immediately to tell you about the "blood," and tries to make you believe there is a fortune in that sheep's veins. He sometimes sells a sheep to a brother speculator who pays a great price just to keep the wind up, paying in lambs, perhaps, at prices equally high, and sometimes he sells to a victim who depends on the "blood" to

improve his sheep, taking no extra care of them, and he finds out to his sorrow that "blood" depletes his pockets without sensibly improving his flock. So much for "blood."

It has been said here, "sheep should not be washed." This is a disagreeable job for the farmer, and I believe it is injurious to the sheep. But what shall we do? If sheep are unwashed, the manufacturers demand a shrinkage of one-third, to make it equal to washed wool. No farmer washes, nor can wash out one-third of the weight over and above what the fleeces usually weigh when sold. Nobody can tell what a washed fleece would weigh if taken off unwashed; but a farmer in this town sent his wool, washed, to a manufacturer, who found that in cleansing it shrunk thirty-seven per cent. The next year he sent his wool, unwashed, from the same flocks, and it shrunk fifty-two per cent, a difference of fifteen per cent.; and I believe this is as much as farmers usually wash from the weight of the fleece. Farmers don't want to wash their sheep, and if the manufacturers would not demand a shrinkage of more than fifteen or twenty per cent. for unwashed wool, most farmers would shear without washing.

Beside the unjust discrimination made by manufacturers between washed and unwashed wool, the farmers suffer also by a discrimination in the tariff in favor of manufacturers. If it takes two pounds of wool to make a yard of cloth, the duty on the wool should equal that on the cloth. But what are the facts? Let the farmers look at any tariff of duties on imports and they will find that the manufacturer is protected by a duty much heavier than is imposed on wool. If I remember, the duty on combing wools, as fixed by a late tariff, was ten per cent. *ad valorem*, and ten cents per pound, and the duty on certain goods manufactured from this wool was fifty cents per pound, and fifty per cent. *ad valorem*. Now, the wool-grower in New England has to compete with the cheap labor of older countries as much as the manufacturers, and there is no good reason why they should not be as highly protected.

When farmers learn that "blood" without good fare, and legislation without justice don't pay, I hope they will find a remedy for both.

REMARKS ON THE SAME SUBJECT.

BY A. B. PALMER OF ORFORD.

As one known to have had some interest in what are often called *fancy* sheep, I was challenged to stand up in their defense. A few years ago such a challenge would not have been given, such defense would not have been called for. Merinos were too popular to need any labored arguments in their favor. Everybody believed in them; everybody had a good word for them. Celebrated flocks received daily and almost hourly visits from devotees from far and near. At State and county fairs the great rush was for the sheep pens. Not only gentlemen, but ladies, were eager to see and ready to admire. Elaborate pictures of noted animals were hung beside less celebrated portraits. High-sounding names and titles distinguished the more noted. Thousands of dollars were asked and paid for some of the best. Distinguished breeders made large fortunes. The excitement was intense. Everybody wanted Merinos; nearly everybody got them. And right here commenced their downfall. And "oh, *what* a fall was there, my countrymen!" Prices went down with a crash. The thing had been overdone, and the penalty must be paid. The country was overstocked with woolens, wool and sheep. There must be a reaction. Everybody wanted to sell, nobody to buy. Valuable flocks were sold for a song, or slaughtered without mercy. Thus the improvements of years were often sacrificed in a day. The prevailing opinion was that the Merinos had had their day, and were now to be extinguished; that these hills were never more to be covered with them; that the coarse wool varieties and cattle would supplant them; that nothing could bring them into favor again. The verdict against them was most emphatic, the hatred intense.

But just as they were supposed to be nearly wiped out, behold, they began to assert themselves. And to-day, notwithstanding the deep-grounded prejudice against the so-called fancy sheep, they challenge the world. Put to a fair test they will not be found wanting. It is not necessary to prove them worth an hundred dollars a head in order to show them worth the keeping. The test to which they were subjected when they broke down was most unreasonable. It proved the folly of men, but not the

worthlessness of sheep. First-class, well-bred sheep have never failed to pay, even during these years of low prices; and they are destined to pay even better in the future. Not that I expect or desire to see the return of war prices, but paying prices I do expect.

Gentlemen would have us believe that the thoroughbred animals are inferior, even, to mongrels; that breeding and blood have little to do with improvements; that petting and pampering and housing make all the difference; that the improvements made by Hammond and Sanford and Stowell and the Riches, and hundreds of others scarcely less noted, were more seeming than real. They forget that by the severest tests, in the hands of impartial men, the claims of the improved American Merino have been established; that for the production of cleansed wool, for beauty of form and vigor of constitution, they stand unequalled in the wide world, and are vastly the superiors of their ancestors. They fail to remember how great improvement was made right here in Lyme by the introduction of these *fancy* sheep, as they are sneeringly called. That there were blunders, and failures I admit; that many spurious and worthless animals were palmed off as the genuine article, I have no doubt. But that the genuine article existed, that it was of surpassing excellence, I fully believe. Here and there it is to be found to-day; and wherever seen by an intelligent, candid observer, it will at once be recognized. There are flocks within easy access that shear an average of ten pounds of good, unwashed wool, and raise a lamb for nearly every ewe, that would sell readily at from five to ten dollars each. Let those who keep sheep that won't pay make a note of this, and go and examine these flocks and try and learn how the thing is done.

Let every farmer who keeps sheep remember the high excellence attainable, and let him resolve not to be outdone. Let him remember that the demand for this beautiful Merino wool will be as permanent as human existence, and that our government can never commit such a folly as to become dependent very largely on foreign supply; that so important an interest will receive such protection as to make it reasonably remunerative. Let them remember the value of Merinos for mutton, and for subduing and enriching worn-out pastures. And especially let them remember that as they increase their sheep and diminish the

number of cows, they lighten the burdens of their overtaxed wives and daughters.

As one who never lost faith in them, I am willing now to have it put upon record that my confidence is*unshaken in the American Merino.

REMARKS ON THE SAME SUBJECT.

BY B. M. MASON OF MOULTONBOROUGH.

Sheep, like all other animals, should be treated kindly. No dog should be allowed to harass them at any time. The practice among many farmers of keeping sheep in pastures enclosed by poor fences, and depending upon dogs to confine them there, ought to be discarded. Those farmers who practice the opposite method, erect good, substantial fences, and dispense with the dog altogether, are the successful sheep-raisers.

My sheep are so tame that a boy can drive them to and from the pasture as easily as they can the cows. My practice two years past, has been to keep them in pastures alternately, away from my neat stock. Now I allow them to run with the cattle a portion of the time, mainly to renovate the pasture that has long been used for neat stock, and the result has been quite satisfactory.

The pasture that was rapidly decreasing in productiveness is now producing much more feed than it did before I adopted the practice of allowing my sheep to graze over it. I believe there is no way in which old pastures can be brought back to their former productiveness so readily and with so little outlay as by keeping sheep in them. Their droppings are rich in fertilizing matter, and are scattered evenly over the pastures. They rest nights upon the highest places, and the rain washes the richness down over the lower portions. Sheep should have good feed both summer and winter. Any farmer who attempts to keep them in any other way will fail. I once heard a good farmer in other respects, say he would not keep sheep were it not to eat the orts made by his cattle. The sheep business with him was an entire failure. I have always noticed that when wool was depressed and lambs low, sheep-raisers will begin to complain that their flocks are sickly and many of them die. This is owing to want

of care. The flocks are tended and cared for just in proportion as wool is high or low. The farmer who thinks that his sheep do not pay, neglects them both in their feed and the care of them otherwise.

BREED OF SHEEP.

Everything considered, I believe the Cotswold is the most profitable sheep to keep upon the farm. They shear heavy fleeces, and as it is used for combing purposes, commands a higher price in the market. The meat is certainly equal to any breed, and superior to many. They are freer from disease, the lambs are stronger and more thrifty in growth than any breed that I have ever been acquainted with. I keep a pure-blood Cotswold buck. My sheep are graded, being three-fourths Cotswold. When the buck is put with the sheep in autumn, a man stands by and takes the sheep away immediately after she is served. He is not allowed to remain with them only a few minutes, and not to serve more than three or four at that time. The lambs are stronger, and better every way, by pursuing this course.

PROFITS OF MY SHEEP.

I usually winter fifty sheep, and they are not allowed to bear lambs until they are two years old. Last year thirty-eight out of fifty had lambs—fifty-four in number—and I raised fifty-three, and lost one. I selected enough of my best ewe lambs out of the number to replenish my flock, and sold forty of the remainder at \$5 per head, one at \$6, and two at \$10 each. Every sheep not in a condition to winter well, either by age or otherwise, is sure to be disposed of in the fall. From these fifty sheep I sold sheep, lambs and wool, to the amount of nearly \$500 and had fifty-one left. Considering the average price of wool and lambs, one year with another, the great value of their manure over that made by neat stock, and the salutary effect of their droppings in the renovating of worn-out pastures, I am decidedly of the opinion that sheep-raising pays better with me than any stock.



LAWS FOR FARMERS.

BY CHARLES H. BARTLETT, ESQ., MANCHESTER.

FIXTURES.

What are and what are not "fixtures" oftentimes becomes an important question in the conveyance of real estate; and while it is impossible to determine in all cases, by a general rule of law, whether an article is or is not a fixture, yet a statement of some general principles applicable to the subject will enable a person, ordinarily, to come to a correct conclusion upon most questions likely to arise under this head.

The question is not determined wholly by the manner of attachment to the realty, but is largely determined by the nature and use of the article itself—the particular means by which it is annexed to the freehold being but one of many considerations upon which the matter hinges. The subject is also modified by the relations which the parties sustain to each other, much greater favor being shown to an outgoing tenant, as betwixt him and his landlord, than to a grantor, as betwixt him and his grantee.

The intention of the owner in regard to the disposition he proposes to make of the fixture, and the object and purpose of its annexation, also, often became material to the enquiry.

A fixture which has once become so annexed to the realty as to constitute a part of it will pass to the grantee by a deed of the premises, even though at the time of the conveyance it is disannexed for some temporary purpose. As, for instance, it has been held that tie-up plunks, stanchion timbers, hinge staples, and tie-chains, which had been removed from a barn as a matter of convenience in repairing it, and were disannexed at the time of the deed, passed by deed of the premises, although it was the inten-

tion of the owner not to restore them, but to substitute others of a different character.

Permanent fences, however constructed, become parts of the realty and pass with it, as does manure upon a farm, and are not regarded as "fixtures," but as partaking the character of the realty itself.

As a general rule, whatever is attached to the freehold becomes a part of it and passes with it, as between grantor and grantee, under which is included an indefinite variety of machinery for all kinds of manufacturing purposes, and many other articles for use or ornamentation. It is said that "it is necessary in order to constitute a fixture, that the article should be let into, or united to the land, or to substances previously connected therewith. It is not enough that it has been laid upon the land, and brought into contact with it; the definition requires something more than mere juxtaposition; as, that the soil shall have been displaced for the purpose of receiving the article, or that the chattel should be cemented or otherwise fastened to some fabric previously attached to the ground;" but an attachment by *belts* has been held to be sufficient, and some modern cases have so far relaxed the rule as to hold that certain objects resting upon the soil are to be regarded as fixtures, though in no way actually attached to it, and the above rule must be accepted with some modifications.

In a case involving the question whether a cider-mill was to be regarded as a fixture, the courts say: "Admitting that the mill might be removed without actual or physical injury to itself or the building, still the cider-mill was essential and necessary to the particular use to which the building was appropriated, and must therefore be regarded as a fixture in it. There was a manifest and necessary dependence and adaptation between the building itself and the cider-mill and press contained in it, and some well-considered adjudged cases have holden that the true test of fixture is to be found in the relation it bears to the uses of the freehold;" and thus while it is material to consider the manner in which the chattel is annexed to the freehold, as bearing upon the question whether or not it has become a fixture, it is still more important to ascertain its use and adaptation to the freehold, as determining its status in this regard; for if it is permanent in its character and essential to the use of the freehold with which it is connected, it will be regarded as a fixture, although the manner of its attachment may be of the most

unsubstantial character: while other articles, like mirrors, ward-robes and other heavy articles of furniture, though attached to a building with nails or screws, still preserve their chattel character, because they have no necessary or special adaptation to the use of the freehold. As between the landlord and his tenant, the rule now is that a tenant may remove any fixture he may find it necessary to construct for the more profitable use and utilization of the leased premises, if done before the expiration of his tenancy. This rule was first adopted to encourage trade and manufactures, and was not extended to agricultural interests, but its general application to all branches of industry has at length been admitted.

DIVISION FENCES.

At common law, adjoining land owners were not obliged to maintain a partition fence, but each was obliged, at his peril, to keep his animals upon his own land. The subject is, therefore, entirely a matter of statutory regulation, and in this country each State has enacted such a code of laws upon the subject as the interest of its agricultural community seemed to demand.

The Province Laws of Massachusetts, which were in force in the New Hampshire colony during the time that both colonies were under the same government, were continued in force after the separation, and contained sundry provisions upon this subject, which, with the modifications and enactments since made to conform to the necessities of a more densely populated country, still constitute the present law now upon our statute book.

Owners of adjoining lands, under improvement, are required to build and repair partition fences in equal shares, but the *actual occupant* is deemed to be the owner, for this purpose.

It is not necessary that lands should be actually tilled or cultivated in order to come under this provision of the law. If they are improved for any purpose of a private character, such as a site for buildings, and the like, they are "improved" within the meaning of the law; but if the land is used for *public* buildings, such as meeting-houses, school-houses, court-houses, and the like, in which case fences would in no way contribute to their utility, it is held that the proprietors are not bound to maintain a fence from which they would derive no benefit.

Any division of fence between adjoining owners may be made by the parties by mutual agreement. To render such an agree-

ment binding upon themselves and their grantees, it is necessary that it should be reduced to writing, and recorded in the town-clerk's office. If the adjoining owners have recognized a certain division for more than twenty years, though never made with legal formality, it will be binding upon the parties after that period.

The legal standard for a sufficient fence is four feet in height, and may consist of "rails, timber, boards or stone wall, and all brooks, rivers, ponds, creeks, ditches, hedges, and all other things deemed by the fence-viewers to be equivalent thereto."

In case owners cannot agree upon a division, fence-viewers are authorized to make such division, and their report, duly recorded, has the same legal effect as a division by the owners; and in case either party neglects to keep his fence in sufficient repair, fence-viewers, upon application by a person interested, may examine the same, and if they find the same insufficient, in their judgment, they are required to notify the delinquent party to repair it within a time stated in the notice, and if he neglects so to do, the adjoining owner may make the necessary repairs, and recover of the delinquent owner double of the appraised value of such improvements.

We insert several sections of the statute bearing upon this subject, the substance of which cannot well be abridged, and which are of especial interest to agriculturists:

[Chapter CXXVIII, General Statutes.]

SECTION 12. When the owner of land ceases to improve the same, or lays it in common, he shall not remove his part of the partition fence, but is not bound to repair it so long as said land remains unimproved or in common.

SECT. 13. The party neglecting to build or keep in repair any partition fence, which he is bound to maintain, is liable for damages arising from such neglect, and shall have no remedy for damages happening to himself therefrom.

SECT. 21. When several owners agree to improve the same in one common field, any justice, on application of two or more owners, may call a meeting of such owners, and the majority of them when met may determine in what manner the same shall be fenced.

Such owners may assign to each his share of the fence to be erected and maintained by him, may adopt by-laws for building and maintaining their common fence by a tax, and assess and collect the same.

Fence-viewers have no power to fix the line between adjoining owners, and unless they locate the fence upon the true line, their proceedings will be void. Neither can they act in a case in which they are interested or related to either of the parties.

GAME LAWS.

For several years our Legislature has been solemnly impressed with the idea that *something* should be done to curb the greed of sportsmen, and give to the scanty and persecuted game within our borders a day of freedom from the relentless and destructive pursuit of the carnivorous bipeds who are making such havoc with our untamed fish, flesh and fowl; but exactly what should be done has amazingly puzzled our sage and astute "fathers" at every session of the Legislature for several years, and they will probably keep on doing and undoing till the objects of their anxious solicitude have ceased to be.

In the meantime sportsmen will do well to stay their hands during the sessions of the Legislature, and thereafter, until the new prohibitions, which may be imposed, may be made known.

So much of our present statutes relating to this subject as are of general interest may be comprehensively stated as follows:

Deer — Not to be killed between the first day of February and the first day of August.

Fur bearing Animals — Not to be destroyed between the first day of May and the fifteenth day of October.

These are the only prohibitions that relate to quadrupeds.

The following birds are protected at all seasons of the year: Robins, thrushes, larks, bluebirds, sparrows, swallows, martins, woodpeckers, bobolinks, yellowbirds, linnets, fly-catchers and warblers. Penalty for killing any of these birds is two dollars.

The following are protected from the first day of February to the fifteenth day of August: Snipes, woodcocks, plovers, rails, yellow-legs, wild pigeons and sandpipers. Penalty, five dollars.

Partridges, grouse and quails are protected from the first day of February to the first day of September, under the same penalty, with the exception that any land-owner, finding partridges or grouse doing damage upon his fruit trees or cultivated land, may kill them at any season of the year; but sportsmen will take notice that this privilege is accorded only to the *owner*

of the premises, and does not allow a third person to kill such birds so found on land of another.

The buying, selling, or having possession of rail, partridge, grouse, quail, woodcock, snipe and plover, during the time they are thus protected, is prohibited by the same penalty as the killing of them; and any person may prohibit the killing of birds upon his land, or land occupied by him, at any season of the year, by posting notices upon his land, or by publishing the same in any newspaper in the county.

The catching of trout, salmon-trout, pickerel, pike and muskalonge, in any other manner than by angling with hook and line, is prohibited absolutely at all times. Pickerel may be caught with hook and line at all seasons of the year, except in March, April and May.

Trout and salmon-trout are protected during the months of September, October and November, and pike and muskalonge from December to June.

The catching of white fish, black bass and perch pike, is prohibited for the term of five years from September 15, 1868, under a penalty of ten dollars for each fish taken, and the catching of salmon and shad in the Merrimack and Connecticut rivers, and their tributaries, is likewise prohibited for the same term, commencing June 14, 1867, under a penalty of fifty dollars.

The possession of any fish during the period covered by any of the above provisions, is made *prima facie* evidence against the possessor, of catching or taking in violation of law.

All nets, seines, fishing-tackle, spears and other implements used in catching fish contrary to law are forfeited.

Towns, at their annual meetings, may appoint fishing wardens, whose duty it shall be to see that all laws for the preservation of fish in the waters within the limits of the town, or upon which it may border, are duly observed.

NOTE.—Since the preparation of the preceding paper changes have been made in the laws so as to allow the baiting and killing of wild pigeons at any time; the fine for killing deer is twenty-five dollars, between the first day of January and the first of August; and the law regarding fishways is repealed so far as the Winnepesaukee River is concerned.—*Sec'y.*

FEEDING OUR SOIL.

THE PROPOSITION MADE.

BY F. W. HOLBROOK OF AMHERST.

How shall we feed the soil? This is an important question, and one that is beginning to occupy the attention of some of our practical farmers in the right direction. How shall we restore to our worn-out soils that state of fertility which it had at first? That there are certain elements of plant food that are not fully supplied by the application of organic manures, is without doubt true; that it requires double the amount of manure to produce the effect it once did on many of our fields, is well known; and why is it? Simply because there are certain elements of plant food that have become exhausted by cropping, which the manure applied does not supply in a sufficient quantity to produce a healthy growth. This is remedied in some cases, for the time being, by deep plowing, by bringing up from the subsoil those minerals required within reach of the plant and the action of the atmosphere. But this plan will not do for any length of time. There is a limit to that operation. What then is to be done? Simply ascertain what is lacking, either by analysis or experiment, and then apply, either in connection with manure or by themselves, the minerals required, and then there is great danger of overdoing the business. Enough is enough, and more than enough is a waste of time and material, as well as money. Another thing, the exhausted state of our pasture lands is a great evil. How shall we restore them is a question of great importance. They cannot be cultivated, many of them; what then is to be done? I have seen the effect of certain minerals applied to the surface where a different kind of grass was brought in. How eager the cattle were for it and how close they would gnaw it, giving a strong hint that that was what was wanted.

It is well understood that one kind of fertilizer or a combination of fertilizers will not produce like results on all soils or in all localities. How then are we farmers to arrive at a definite conclusion, each for himself, in regard to the true course for him to pursue to raise the crop desired to cultivate?

It is too much trouble and expense to procure an analysis. Then, again, if we find what is a complete manure, what is necessary to produce a crop on any soil, it will prove more expensive than need be on nearly all soils, because there may be the necessary amount of a certain mineral as the constituent part of the plant to be grown already in the soil, and more added would be unnecessary and perhaps injurious.

The conclusions then arrived at from observation and experience are that a given amount of barnyard or common stable manure, with the required amount of minerals added which are necessary for the land upon which it is to be applied and the crop to be grown, will produce as good results as twice the amount of manure without the mineral. But the amount and proportion of each that is to govern us in the application is according to the requirements of the soil upon which it is applied and the kind of crop to be grown. For instance, if the crop to be grown is corn, and lime is lacking, there will be a poor crop, although everything else is there. So of other crops, if one thing is lacking, a poor crop is the result. This is an important question, how to feed the soil. We wish that all practical farmers would study into this thing.

THE QUESTION CONSIDERED.

BY GEORGE F. BEEDE OF FREMONT.

The article on feeding the soil presents many important questions. As it so nearly expresses the views of intelligent farmers, and such as I entertained some years ago, I am inclined to say a few words in reply. Not in a criticising spirit, by any means, but to cast in my mite to promote the cause of successful farming. The truth is what we want in all these questions. No doubt we have, and are believing and practicing many errors, which observation, experience and study will remove.

To commence, I prefer to state the question thus: How shall we feed our crops? and follow the same train of thoughts, giving

my present ideas on the same subjects, which have somewhat changed, as the sequel will show.

I do not *now* think the soil is worn out; larger crops are a positive proof of it. This question should be: How shall we *increase* the fertility of the soil? On this point Liebig says: "The difference between fertile, arable land, and barren, untilled soil, is not the result of any dissimilarity in the nutritive substances which they contain; because in cultivation upon a large scale, to convert the untilled, rough soil into fertile, arable land, the ground, so far from being enriched, is rather impoverished by the cultivation of other plants on it."

The nutritive substances in the untilled soil are locked up, not in an available condition to be taken up to nourish the crop. The arable land is richer because the plant-food is assimilable, yet poorer by the ash constituents required for the growth and perfection of the plants harvested from it.

What is an organic manure? I could imagine one but should not know where to find it. Take barnyard manure for instance, which is the type for a complete manure. According to a late analysis by Prof. Voelcker, it contains two and one-half per cent. soluble organic matter, and one and one-half per cent. of soluble mineral matter; the insoluble matter not being immediately available for plant food, it is not worth mentioning in this connection. As the analysis is before me, I will add that fresh or green manure contains more than three times as much soluble mineral matter as rotted manure; also that the fresh manure contains eight times as much free ammonia, and seventeen times as much ammoniacal salts. I have been aware for several years that green manure gave the best results. In practice I do not use rotted manure for any purpose, and am pleased to find that the researches of the chemists agree with the practice in the field; that *theory* is banished; that the facts of the laboratory and the facts of the soil and plants are the same, as they always will be when we get at the true facts in both places. The truth is, we have put too much confidence in theories; have been working by faith instead of by sight; have taken conjectural science for positive science; have believed men because they said it, without requiring of them the proof. The thought comes, what is science? Webster defines it thus: "Certain knowledge; the comprehension or understanding of truth or facts by the mind." Having this starting point, what is scientific farming, of which we

hear so much? It would be perfect farming, the practice of facts; no guess work or theories; every problem could be demonstrated. Have we got it? Is farming a science? There can be but one answer; every candid man will say *no*. Scientific farming, then, as a pure science, is a myth, and we should discard all who claim it for themselves, and let their fancies, theories, and errors go with them. The question now is: What is farming? It is an art; "the disposition or modification of things by human skill, to answer the purpose intended." It is like any other art, acquired by experience, observation and study. If science in any of its departments has any facts that will aid or instruct the farmer in his art or business, it is not wisdom on his part to refuse the helping hand.

As for me, being a practical farmer, I want all the help I can get, but in all cases when scientific men seek to help me, I intend to demand the proofs; shall not take any thing for granted unless it is practically and satisfactorily proved to be a fact. We should be free men in this respect, not in bondage to some professor's or doctor's pet hobbies. To be free indeed we must have no prejudices or pet theories of our own.

To return to the article before me, the next condition with me is reversed; it takes one-half of the manure to produce the same results now as it once did. Why? The manure is better again and the soil is only one-half as poor. How is this result obtained?

The liquid manure is saved and the land is not allowed to produce less than a ton of hay per acre before manuring again; it formerly went to one-half ton and less, but mostly less, before it was broken up. It is much cheaper, and far more profitable to keep up a continuous production, than to restore fertility to land after it has become impoverished.

Do our fields produce less because certain elements of plant-food have become exhausted by cropping? Not at all. It is a gradual using up of the available nutritive substances of the soil, if there is any crop whatever produced. Were a single element of necessary nutriment for the crop planted exhausted or lacking, the crop would be a failure. This idea has been made prominent, no doubt, by a certain class of men, so they more easily persuade the farmer to buy their patent nostrums, special manures and chemical fertilizers.

Deep plowing has not been beneficial with me — I mean extreme deep plowing, deeper than the surface or arable soil. If I should

plow even two inches deeper than my usual practice, the soil I am working would require twice as much manure as before to produce like results.

Sixteen years ago I trenched a plot of ground two feet deep, according to the rules laid down in the books. I managed to get the top soil at the bottom, and the bottom at the surface, faithfully. What followed? The soil once fertile is now barren. It has been heavily manured repeatedly, but the crops planted obstinately refuse to grow. The ameliorating action of the atmosphere has not yet taken place; when in the unknown future this is to be is yet a profound mystery. The reason of this is plain: The top soil now has too much mineral matter in an insoluble condition; there is not the humus or organic matter present at the surface (it is at uncertain depths below) to solve nutrition in sufficient quantities to sustain a perfect development of plant-life. I am thankful it is a small plot in the garden; it is a lasting monument to the beauties of trenching and deep plowing, as far as this farm is concerned.

When there was so much said about the benefits of sub-soil plowing, I became satisfied that it was a fine thing in theory, and might possibly be of general application. If so, I wanted the benefit of it; finally I concluded to buy a plow and try it; hired a heavy team extra; dragged the sub-soiler with unutterable fatigue to man and beast through three acres of land, plump twenty inches deep; the sub-soil being so mellow the furrow-plow run nearly two inches deeper than usual, which I then thought was a good thing. Now for the result: The land was manured as heavy as usual, planted with corn; the crop was a miserably poor one; the season was favorable, but the land was never disgraced by so mean a crop of corn, before or since, to our knowledge. The barley crop following was bad, and the grass did not come up to an average yield. Time, however, has overcome the disadvantages, and to-day it is neither better nor worse for the sub-soiling. On the whole it was rather an expensive experiment, and I have on hand a good subsoil plow which I would be willing to sell at a large discount.

Since these practical experiments I indulge in a smile when I hear New Hampshire farmers talk of their soil being deficient in mineral matters. I am rather inclined to think that the boot is on the other leg; that it is the humus or organic matter which has been exhausted by cropping.

It is the organic matter, vegetable refuse, leaf mold, meadow muck and barn-yard manure (not that these are pure humus, but the organic part is in excess), which I endeavor to add to the soil. The results are satisfactory. I feel confident we have the whole difficulty under easy control; this confidence does not arise from theory, but from actual practice. There need not be the least occasion for any anxiety, or fear of exhausting or impoverishing the soil, so long as our practices do not diminish the productions of our fields.

The words of Professor Johnson are to the point:

"Those ingredients of the soil which could be spared for all that they immediately contribute to the nourishment of crops, are often the chief factors of fertility on account of their indirect action, or because they supply some necessary physical condition. This humus is not in any way essential to the growth of agricultural plants, for plants have been raised to full perfection without it, yet in the soil it has immense value, practically, since among other reasons it stores and supplies water and assimilable nitrogen."

I would add that one of its chief values is that it acts as a solvent on the mineral ingredients of the soil.

By the way, I saw the first part of the last sentence above quoted, in an article printed in an agricultural paper, without the addition of the last part of it, which made Professor Johnson say that "humus was not a necessary ingredient of the soil." This is but another illustration of the trickery employed by men writing in the interest of the manufacturers of mineral fertilizers. Any way to get the hard-earned money from the ignorant farmer.

The next point: How shall we restore our pasture lands? My way of restoring them, or rather a way of putting them to some practical use, is to allow them to grow up again to wood, as they are very much inclined to do.

The concluding question is: What does an analysis of the soil amount to for the practical farmer? If the soil is sterile it might do good, otherwise it can be of very little use. If the soil will produce a perfect crop, fully developed, however small, all the elements of fertility are present in the soil. I quote the words of Professor Johnson again. I admire the straightforward manner and the honest ring they have:

"The question, how much a particular soil is able to give to crops, is one for which we not only have no chemical answer at the present, but one that for many years, and, perhaps always, can be answered only by the method of experience—by appealing to the crop and to the soil."

Again he says :

"Chemical analysis is competent to inform us very accurately as to the ultimate composition of the soil, but as regards its proximate composition or its chemical constitution, there remains a vast and difficult unknown, which will yield only to very long and laborious investigation."

Professor Liebig says :

"A soil to be fertile for cultivated plants, must, as a primary condition, contain in sufficient quantity the nutritive substances required by those plants. But chemical analysis, which determines this relation, gives but rarely a correct standard by which to measure the fertility of different soils, because the nutritive substances therein contained, to be really available and effective, must have a certain form and condition, which analysis reveals but imperfectly."

Again the same author writes :

"In comparing several equally productive soils, we often find that they differ immensely in their chemical composition, and of two soils containing, the one eighty to ninety per cent., the other only twenty per cent. of pebbles and sand, the former will frequently yield better crops than the latter. The higher produce obtained from the comparatively poorer soil proves that it is only the surface of the soil containing the nutritive elements which is effective; that the fertility of a soil is not proportionate to the quantity of nutritive substances which chemical analysis proves to be present."

Professor Ville, in speaking of farm dung-hill manure, instead of the soil, states the same facts without explanations: "I do not know what the composition of the dung-hill is, although I do not hesitate to assert that it includes the four agents of vegetable production; for, without their presence, its good effects would be incomprehensible. Here is its analysis." In other words its chemical analysis does not give its chemical composition; the first is its physical combination, the latter its chemical combination.

One thought more: What does the chemist require, more than the sample of soil, to arrive at a partially correct estimation of its fertility? Professor Caldwell in his methods of analysis says :

"At the time of taking the sample of the soil, observations should be made in regard to the following points:

- (a) The geological origin of the soil.
- (b) The nature of the underlying strata.
- (c) The meteorology of the locality — by consulting meteorological records, if possible; otherwise, by the general opinion of the neighborhood; in this connection, the height of the locality above the level of the sea, should be noted also.
- (d) The management and rotation of crops in previous years.
- (e) The character of the customary manuring.
- (f) The amount of the crops removed in the preceding year, and, if possible, the average amount of each of the more important crops yielded by the field.
- (g) The practical judgment of neighboring farmers in regard to the field."

Comment on the above is not necessary, but it reminds me of a personal experience.

A few years ago when attending a farmers' meeting, one of the lecturers strongly advocated that farmers should have their soils analyzed, stating the importance and benefits in rose colors.

Having confidence in the speaker, I concluded it would be of immense value; so I privately, after the meeting closed, inquired the cost, how to select the sample, etc. The gentleman remarked in reply, that to be valuable, a personal examination of the field would be necessary, to observe the character of the surrounding hills, the condition of the soil as to moisture, the past rotation, and the yield of the present crops. I instantly came to the conclusion that he relied more upon his observations and practical judgment as a farmer, than upon his chemical knowledge and an analysis of the soil, also that I was a competent judge of these matters myself; so I thanked the gentleman, and have not troubled myself since about having a chemical analysis of soil made for me.

I cannot very well conclude this already lengthy article, without again quoting from Liebig.

"In practice, it is quite impossible, by a supply of mineral substances, to improve the land of an entire country, so that it shall yield crops considerably more abundant than the natural store of food elements in the soil enables it to produce.

"The art of the agriculturist mainly consists in selecting such plants as will thrive best on his land, in adopting a proper system of rotation, and in using all the means at his command to make the nutritive elements in chemical combination available for plants.

"The achievements of practical agriculture, in these respects, are wonderful, and they demonstrate that the triumphs of art far exceed those of science, and that the farmer, by aiding the agencies which improve the chemical and physical condition of his land, can obtain much more abundant crops than by supplying nutritive matters; because what he can supply in the shape of manure, with due regard to a proper return, is so small in comparison with the store of nutritive matter contained in a fruitful soil, that a perceptible increase of produce can hardly be expected to result from it.

"But what the farmer may achieve by manuring is at best the result — unquestionably a most important one — that his crops suffer no diminution. Where they actually increase, this is less attributable to the addition made to the store of mineral constituents than to their distribution, and to the fact that certain quantities of inoperative substances have been rendered available."

THE RESTORATION OF WORN-OUT LANDS.

BY M. J. HARVEY OF EPPING.

If I were to undertake a restoration of our exhausted lands I would commence with the high, rocky, worn-out pastures of New England, too rough to be reached either by plow or harrow, and simply let Nature have her own way undisturbed, and she, who in all cases is fully able to restore her own exhausted energies, would soon bring up a growth of forest trees to cover such unsightly land, that now pays interest of no more than one per cent. on the investment. I shall not stop here to prove what appears a self-evident fact to every farmer, that land is fully restored to fertility after a growth of forest trees has been removed where they have stood forty or fifty years (and some kinds of trees in much less time) by the carpet of fallen leaves year after year adding vegetable matter, potash and nitre, two of the four bases of vegetable growth, to the soil. The profitableness of this mode of "restoring worn-out lands" is undisputable when we consider the great demand for wood and timber in the United States. A nearly correct estimate, made before the building of the Pacific railroad, shows that it takes one hundred and fifty thousand acres of the best timber for railroad sleepers alone in a single year. For railroad buildings, repairs and cars the annual expenditure in wood is thirty-eight millions of dollars. The iron horse, that flies, like the fabled hippogriff of old, between the hills and over the valleys and prairies of our country, consumes yearly fifty-six millions of dollars worth more. More than four thousand artisans are working in wood, and, if the value of their labor is one thousand dollars a year each, the wood interest of the country represents five hundred millions of dollars more, annually. "As a treeless country is equivalent to a rainless country, like

Arizona and Colorado, where agriculture is an impossibility but by expensive irrigation," another saving may be made in this direction by "restoring a large part of our worn-out lands" in this way.

But it may be said that this is too slow a source of income for the present generation. True, but there is always somebody to come after us, and we should be willing to leave our country as good as we found it, especially when it is to be occupied by our own posterity. But "while the grass grows the stag starves." On what are the immense herds of cattle to graze that go yearly to help swell the cattle markets of Brighton and New York? Although but as a grain of sand on the sea-shore, compared to Texan and Western hordes, yet they are the small New England farmer's main dependence for money, in these days of high taxes and high labor.

Then let all pasture lands, smooth enough to be plowed, be turned over progressively, as it can be done a little at a time in autumn. Sow two bushels of plaster broadcast to the acre; sow winter rye and seed to clover, the rye to be fed by the cattle the following summer, that the stock may suffer no loss of feed, as one acre so treated will produce more feed than ten in its present run-down condition of moss and junipers. Thus we have disposed of the pasture land in a body; the fields shall next receive our attention.

Without stopping here to go through the usual routine of increasing the manure pile to its utmost capacity, perhaps already well-known to all, and which should be well applied to the run-down fields as far as it goes, let what remains be treated with plaster and clover seed. Let the clover stand till fully ripe and dead before being plowed under, for if plowed under in a green state it is too apt to create a sourness in the soil by fermentation, and result in injury rather than benefit. To back this assertion I here produce the testimony of Mr. M. B. Sears of Wintrop, Me., in the Agricultural Report of 1871, page 352. It says "that he had attempted to raise wheat in rotation with clover, by sowing clover in the spring with wheat, and turning it under in the fall. With this treatment the wheat crop deteriorated. He then changed his course and let the clover grow till the next July and plowed it in when in full blossom. The wheat still deteriorated. He next tried the experiment of turning it under when it was ripe and obtained favorable results. From these experiments he

concludes that clover should not be plowed in when green, but be allowed to stand until it is ripe." This mode of incorporating vegetable matter into a light and sandy, porous soil is better than barnyard manure on this kind of soil as it remains longer in such soil, and does not so soon sift down through it, below the reach of vegetation. But it may be asked what shall be done with land too sandy and sterile to raise the first start of vegetable matter to be plowed in? I answer as a student in the Naval Academy at Annapolis once did, when asked by his tutor what he would do with his ship in a storm, sails blown to threads, rudder and anchors gone, and she drifting into breakers dead ahead? His answer was, "if she was so far gone as that I would let her go to the d—l where she ought to go!" So of such land.

Another way to restore worn-out land is to increase the forage crop on the farm, and consequently to increase the stock, which increases the manure pile, and that will restore worn-out land. The raising of fodder corn fully accomplishes this end. A year or two since, I plowed up a strip of run down dry field in June, that had not been plowed or manured since the beginning of the late war; planted it to fodder corn the 15th day of June, in drills two and one-half feet apart, with light manuring of hen manure compost and gypsum strewed in the furrow; hoed once with an improved horse-hoe, and no other cultivator whatever. Most of it grew to the height of eight feet, and over, and produced ears of corn, some of which I considered so far matured as to germinate and grow, the variety planted being the Western yellow corn. It produced at the rate of three tons to the acre. On account of the wet season, it was allowed to stand till nearly ripe; was cut and fed to cattle the following winter and spring, the cattle eating all clean, even the large butt stalks, with avidity, which, taken with the ears, I consider equal to the best English hay; which strip of land could not have produced at the rate of over five hundred weight per acre. I do not wish to speak deprecatingly of the hay crop — which is the best product of moist land natural for it — when I say that I think corn both for forage and grain, and, indirectly, to accomplish the object which is the subject of this address, is the best gift of the Creator to the inhabitants of this Western Hemisphere. To this point, though at the expense, perhaps, of being accounted visionary, I will relate an allegory of the Objebwas, in Patent Office Report of 1853, page 96:

"A young man went out into the woods to fast, at that period of life when youth is exchanged for manhood. He built a lodge of boughs, in a secluded place, and painted his face of a sombre hue. By day he amused himself walking about, looking at the various shrubs and wild plants; at night he lay down in his bower, which, being open, he could look up into the sky. He sought a gift from the Master of Life, and he hoped it would be something to benefit his race. On the third day he became too weak to leave the lodge, and, as he lay gazing upwards, he saw a spirit come down, in the shape of a beautiful young man, dressed in green, having green plumes on his head, who told him to arise and wrestle with him, as this was the only way in which he could obtain his wishes. He did so, and found his strength renewed by the effort. This visit and the trial of wrestling were repeated for four days, the youth feeling at each trial that, although his bodily strength declined, a moral and supernatural energy was imparted, which promised him the final victory. On the third day his celestial visitor spoke to him. 'Tomorrow,' said he, 'will be the seventh day of your fast and the last time I shall wrestle with you. You will triumph over me and gain your wishes. As soon as you have thrown me down, strip off my clothes and bury me in this spot, in soft, fresh earth. When you have done this, leave me, but come occasionally to visit the place to keep the weeds from growing. Once or twice cover me with fresh earth.' He then departed, but returned the next day, and, as he had predicted, was thrown down. The young man punctually obeyed his instruction in every particular, and soon had the pleasure of seeing the green plumes of his sky visitor shooting up through the ground. He carefully weeded the earth, and kept it fresh and soft, and in due time was gratified by beholding the matured plant bending with its golden fruit and gracefully waving its green leaves and yellow tassels in the wind. He then invited his parents to the spot to behold the new plant. 'It is Mondamin,' replied his father; 'it is the spirit's grain!' They immediately prepared a feast, and invited their friends to partake of it. And this is the origin of Indian corn."

This appears to be almost an exact though unwritten duplicate of the divine word, concerning Jacob's wrestling with the angel when left behind his train of cattle and goods, to perform his evening devotions, found in the thirty-second chapter of Genesis.

But to return to the homely substance of the subject. Western corn, planted for fodder, makes the most gigantic growth from poor ground of any plant within my knowledge. Either it feeds largely on some substance left in the soil not extracted by any other plant, or it feeds more largely on the atmosphere, and from one or both of these causes, is a stepping-stone to restore worn-out lands, by feeding the crop to the stock, and returning the manure to the soil.

Another way to restore worn-out lands is by means of phosphates, when it can be done at not too high a price per acre.

Ground raw bone at \$2.50 per hundred, wood ashes at twenty-five or thirty cents per bushel, or, for want of ashes, potash of the best quality at ten or twelve cents per pound, and plaster at forty-five cents per one hundred weight, mixed with swamp mud or loam, is a cheap and reliable fertilizer. I quote from the Agricultural Report of 1871, page 356, the following :

“ Dr. J. R. Nichols, of Haverhill, in seven years, renovated his exhausted or run-out farm of one hundred acres, by the use of fertilizers, without animal manure, to such an extent that he now keeps eighteen cows, five horses, three hogs, and, for a portion of the year, one yoke of oxen. When he purchased the farm, only ten tons of hay were cut.

Another profitable way to restore worn-out fields, is by means of sheep, which can be practiced by small farmers as well as large ones, where they can be kept in fields near the house, to be protected from dogs, and what is most needed, is a few rods of cheap, portable fence, to be taken away and set up at pleasure, commencing as soon as the first run-down piece of grass is cut, to pasture the sheep on such ground as needs to be plowed the following year, and so move them round over the fields in rotation. To support this assertion, I quote from the Agricultural Report of 1871, page 353, the statement of Mr. H. G. Abbott, of Vassalborough, Maine.

“ I had a mowing field of forty acres covered with white-weed and yellow-weed, and the grass very much killed out. I turned out ten acres of it for a pasture, on which I placed fifty sheep, and allowed them to feed upon it for two years. In the spring of the third year, I mowed it, and obtained the heaviest crop of hay that I had ever grown, with any amount of dressing. Timothy and red-top came in, and in some places the clover was so heavy that the mowing-machine could not be used.”

Our low meadow lands, now so much neglected and so little prized, are full of natural richness of vegetable matter from decomposed grass and leaves of thousands of years. They contain potash and the finest of the soil washed from surrounding hills that have been grazed by cattle whose manure was here deposited by annual rains, and if properly redeemed by the labor of the farmer, will, in these latter years of drought, yield him the best returns of all his land. I have seen the hay crop of a little over four acres, in my own neighborhood, amount to ten tons, while those of neighboring farms, with their high and dry fields

of twenty-five or thirty acres, amounted to no more than six or seven tons, making the business of haying a mere mockery.

Such meadow land should be ditched deeply through its lowest outlet, to drain off the water, with side ditches opening into the main ditch, thus rendering it dry for plowing, then to be plowed with a sharp steel plow, capable of cutting the tough roots of hassocks, if any there are, turning all over smooth in narrow beds running towards the main ditch, to be harrowed and seeded down to herds-grass, top-dressed with lime or ashes or both. That such land may never again depreciate, a dam should be built at its lowest outlet (which, from the situation of such land, can be done in almost every case), the gate to be put down for only two or three days at a time, in early spring when the snows are melting, whose water, according to the best authority, contains a large percentage of ammonia, and the sediment from the water being suffered to settle, will annually restore such land to fertility. But if flowed through winter it will prove fatal to the quality of grass, as no English grass can live where the soil is not annually congealed by frost.

This principle of the fertilizing effect of water, was recognized by Virgil in the grand old days of Roman husbandry, on his farm on the banks of the classic Mincio, nearly two thousand years ago, and by the inspired Homer of the Israelites, who tuned his prophetic harp of old amidst the luxuriant vineyards of Palestine. We are informed in a quotation from Montesquieu's "Spirit of Laws," that "when the Persians were masters of Asia, they permitted those who conveyed a spring of water to any place which had not been watered before, to enjoy the benefit for five generations; and, as a number of rivulets flowed from Mt. Taurus, they spared no expense in directing the course of their streams. At this day, without knowing how they came there, they are found in field and gardens." A goblet of the clearest water that ever flowed from the fountain head contains sediment. What then must have been the annual deposit of richness, brought down by the Nile from the unknown mountainous regions of Abyssinia and Central Africa, on the flat fields of Egypt, supporting its once gorgeous royalty, with its dense population, almost without labor, with unimpaired fertility. This need not be regarded as foreign or remote, but is practically within the reach of almost every farmer possessed of such lands.

GROW GRASS AND CONSUME IT.

BY J. W. SANBORN, LOWER GILMANTON.

For the last three years nine-tenths of the farm capital employed in New Hampshire has been dead. In most cases where the capital so employed has apparently yielded a per cent. on the investment, it has had superior skill and intelligence devoted to it, which if charged to the farm at its fair market value would fail to return a dividend. Labor has not been too highly rewarded, but produce has not brought a price commensurate with its cost of production. *

The West still does and will remain in sharp competition with us in most of our staple products. Our soil lacks in desired fertility. The commercial fertilizers offered for sale in our markets are most of them beyond our reach, and I think must remain so. Hence the farmers of New Hampshire are looking more after the practical side of the question, and are eagerly asking how shall we make the farm pay?

Now I am sanguine enough to believe that the best farms of the State will, or may be made to pay. The poorer ones should be turned over to the forests. Men should never waste their lives upon them, for there is a more useful field for them. Under the present existing circumstances, which are likely to continue for a while, my experience seems to teach me that the true policy of farmers is to raise no crops for the market with purchased commercial fertilizers; to raise no crops but those you intend to feed out on the farm, for thereby you will sell a far less amount of the elements of fertility. Husband with jealous care every resource of plant food on or about the farm. Abandon the raising of corn; make grass an especial crop; raise all the clover you can; irrigate. *

My experiments with fertilizers, like too many others tried and reported, are too empirical to make them of great value as a basis from which to make nice calculations. An experiment to be of the first importance should extend over several years and all modifying circumstances should be noted with careful judgment; so that I will condense and state for the most part merely my conclusions.

Superphosphate of lime. I have used it on grass land, corn and potatoes, on rich and on poor soil, with and without barnyard manure. One barrel proved to be a fraud, and was a damage. Other lots which I have used made the dividend the wrong way. Only in one instance was I satisfied with the increased growth, and that was on early potatoes—the object being early potatoes, regardless of price. But there was apparently a profit to be credited to the fertilizer applied.

Now there is an element that should enter into the calculation here, that farmers seldom report. The superphosphates are special fertilizers, not complete manures; that is they do not contain all of the elements of plant-food. It is supposed that they contain for the most part what their name indicates. They will furnish, then, to the plant, the nitrogen, phosphoric acid and lime, leaving the potash and other elements of the plant to be supplied by the soil, or other added manure, yet we give the fertilizer applied credit for the excess of growth.

Again, we purchase a so-called nitrogenous superphosphate of lime, and are defrauded in the purchase, the fertilizer containing just enough of the elements named in an active form to give the plant a quick start. It becomes vigorous, uses up the fertilizer, falls back upon the soil, and feeds upon its natural fertility, or the barnyard manure it contains. Yet in both instances do we see statements made of the cost of fertilizer applied, and the excess of growth it gives, wherein the maker has implicit faith in the belief that he has made a profit on the superphosphate; yet, if he should instead of giving the fertilizer credit for the additional growth, charge at their fair market value all elements found in the plant not supplied by his purchased fertilizer, he would come to grief. In the present uncertain value of the commercial fertilizers, a man furnishing ground and tools, should, in this chance business, expect to obtain a very large per cent. on his investment.

. Now, I would not have it understood that I doubt our ability

to prepare artificial food for plants, or to supply any element lacking in the soil in a form from which it can be readily obtained by the growing plant, but I do believe that they have not, and will not be prepared at a price that the bulk of New Hampshire farmers can afford to pay for them. People living about our large centers, engaged in market gardening, raising those things that the city must or will have, will place them at a price beyond our reach. In this statement we judge the future by the past. Let us see what has been.

In 1862, Dr. Evan Pugh, President of the Pennsylvania Agricultural College, placed the commercial value of nitrogen at seventeen cents a pound, phosphoric acid at twelve and a half cents. Prof. Johnson, at the same time, nearly the same. In 1869, S. L. Goodale, Secretary Maine Board of Agriculture, rated the commercial value of ammonia at thirty-five cents a pound, soluble phosphoric acid at twenty-five cents a pound. The last department report makes ammonia worth twenty-two cents, and soluble phosphoric acid thirteen cents per pound.

Now, when it is considered that a ton of mixed hay contain nitrogen sufficient to make thirty pounds ammonia, we start back and exclaim, can it pay to buy? But we are fairly amazed when we ascertain that, at those figures, a ton of a leading phosphate sold in this State is worth only \$45.66, which I think sells for \$60.00. We will consider briefly the cost of raising a ton of hay, at the prices indicated by the department, with commercial fertilizers. In a ton of mixed hay:

Potash 18.11 pounds at 10 cents per pound	\$1 81
Phosphoric acid, 15.97 pounds at 15 cents per pound	2 39
Nitrogen, 25 pounds - (30 pounds ammonia) at 22 cents per pound	6 60
Other elements	30
	\$11 10

A ton of clover hay contains more than twice that amount of nitrogen, and it would cost to grow it on a plantation with commercial fertilizers, in round numbers, \$18.00.

The average price of hay in this locality will average for a season of years very little over fifteen dollars. Hence it would seem that it would cost more to raise clover with commercial fertilizers, than its selling price, after throwing in farm tools and labor, while mixed hay would yield only four dollars revenue. It will be said that this is not a fair statement of the case.

I know that a very large proportion of the plant is grown from the ammonia of the air, or the saline matter brought to the roots by rains and dews, also that mineral matter is continually being supplied by the disintegration of the soil—a reason, I think against the purchase of commercial fertilizers. For I believe that if all that is grown upon the farm is fed upon it, it will increase in fertility—more nitrogen and mineral matter being supplied yearly from the sources named, and the little contained in the drink of the animals, than is carried away in their bodies.

Now, if the manure from a ton of mixed hay is worth eleven dollars and the hay twenty, will it not pay to feed? If the manure from corn is worth over twelve dollars a ton, is it not best to buy?

In using the manure its practical value will not come up to those figures, it may be said. The good farmer will not lose more of the value of his manure heap in practice, than he will lose and get cheated on the commercial fertilizers. Analysis has repeatedly shown fertilizers not worth twenty-eight per cent. of their selling price.

I find by referring to my journal of farm experiments, a large number other than the superphosphates. Quite a number of them have a negative value only, and I would say to farmers, never apply any fertilizers to unturned sward long bound out; you will get no return worth mentioning. I have not been able to get a good growth from rich, liquid manure. Noticing the large amount of lime in the ashes of mixed hay, often placed at thirty per cent. more than that of any other element in the ashes, and having some land long cropped with hay, and knowing the characteristic of lime is to work down, I thought I had discovered in the lime, for surface dressing, the panacea for a grass crop on that land. But “The best-laid plans o’ mice an’ men, gang aft agley.” I bought twenty casks of lime for twelve dollars, mixed it with muck enough to enable me to spread it well, and applied it to three different conditions of land, three years ago, and have seen no benefit from it. Have broken down bones with sulphuric acid. I shall not try it again. Have tried the manures and theory of Dr. Ville.

The manures and sources of manures, that pay me on a heavy clay-loam soil, is the vault, so arranged that everything from the house is washed into it. It pays as a sanitary precaution, and a means of cleanliness, and is equal to quite a little pile of super-

phosphate, or bones broken down with ashes. Buy corn when it will pay to feed. From some considerable observation and use, I should advise the use of muck. It has been used on the farm alone, mixed with ashes, with manure and the salt and lime mixture recommended by Dana. It will pay if rightly handled.

The manure heap is the great source of plant food, and in the future it may be and should be made an additional source of plant food, for much of its value is lost, while we do not know the most effective method of fitting and preparing it for the soil. It is said now, that fresh manure contains no free ammonia and that as it is formed in fermentation, organic acids are also formed that retain it. Hence absorbents of ammonia have but little value. A thorough knowledge of the manure heap would be of immense practical value. Who will "rise to explain?"

In advocating the abandonment of the raising of corn, and making grass a special crop, I know that the greater part of real farmers will disagree with me, and all amateurs. Let every State produce within its own border what it consumes and be happy, sounds very fine. But if the West can produce it cheaper than we, it is suicidal in us to attempt its production. Let New England manufacture and the West produce corn. They can buy our manufactured goods only as we buy their produce. The exchange is all in our favor. The West has a fertile soil and they are selling it to us. We are transplanting the fertility of their soil to New England. And years hence our soil will compare more favorably with theirs in fertility.

Formerly we planted largely of corn, last year none, and only what potatoes we wished to consume. Now why? Without assuming that corn does not pay here, I will assume what I think to be true, that grass pays better and clover better still. Let us see. The average production of corn per acre in New Hampshire for the years 1869 and 1871 equalled 1800 pounds. It is considered that an acre of ground that will produce 1800 pounds corn, will produce 3400 pounds mixed hay, or 4500 pounds clover, and I think it will. The grass crop of this State averages 2000 pounds per acre, and follows corn and grain, and then is allowed to run several years on the strength of the first and only application of manure, and that made previous to the hoed crops. The following, according to Johnston, is the amount of nutriment contained in the above named quantities of each crop:

	Husk or Woody Fibre.	Starch Sugar and Gum.	Gluten Albumen, etc.	Oil or Fat.	Saline Matter.
Corn,	270	900	216	90 to 170	27
Hay,	1020	1360	240	70 to 170	220
Clover,	1120	1800	420	135 to 225	400

Here then we find that the grass crop is worth more from an acre of ground than the corn crop. It may be said that this is theory; but it corresponds with the practice of a multitude of good farmers, and is a fair estimate of the value of hay. I have fed largely of corn during the past seasons of drought, and should prefer one hundred bushels of well-cured hay to one bushel of corn.

This does not include the corn fodder. We will allow the stalks of the corn crop to pay for the seed, gathering, husking, carrying to mill, toll and waste. The toll will amount to two bushels. This estimate of the value of the fodder is higher than that put upon it by some. The cost of the production of an acre of corn other than that estimated, paid by its fodder, will be, with us, for plowing, planting, harrowing, cultivating and hoeing, \$14, on large fields free from fast rocks. An acre of grasses seeded down for one year is seeded down for ten. I estimate the average cost per year \$4, with the hay in the barn. Here then we have more nutriment for ten dollars less per acre every year. Now if there are thirty-six thousand acres of lands annually devoted to the corn crop in this State, and there are probably more, it would seem that there is \$360,000 worth of labor yearly wasted, that might be turned into profitable employment, and it should be, and yet we are getting less feeding value. If all of this labor was devoted to the preparing of manures, and the soil for the grass crop, I think we should soon have less reason to complain of the hard times.

If, after considering that the value of the manure from a ton of corn is worth theoretically twelve dollars, and practically it may be worth nearly as much, it is thought it will not pay to buy and feed, how can it be thought to pay to raise it by the sale of grass? But it is said that the farmer who makes the farm pay, is a right feeder, must have grain. A very little; some for colts, calves, and breeding ewes. A skillful feeder will make his three-year old steers dress one thousand pounds, that will pay for the hay which they will consume, and a little grain the first winter. Now this is not fanciful; cut your hay early while it is green and

succulent, before it has become converted into woody fibre; feed it to farm stock, a little at a time, as long as they will eat; then put before them the best hay of another variety that you can raise, perhaps clover cut very early, and see them eat it and grow without corn.

A word for clover, and I shall hardly say too much in its favor. I believe it to be of the first importance to the farmers of New Hampshire. It will yield nearly twenty-five per cent. more dry fodder to the acre than mixed hay. It contains more flesh forming matter, and is worth more equal weight to feed, if rightly cured. Contrary to the general belief, it contains less wood fibre also than mixed hay. Best of all it obtains more of its growth from the air and subsoil than any crop largely grown in this State. Its roots are found in poor soils several feet below the surface of the ground. After the second year's growth the roots weigh one-half as much as the growth above. It will be readily seen that so much vegetable matter in the soil performs an office of no small importance. A good crop of clover has been known to grow on soil so poor in nitrogen that it would not grow wheat. If it extracts an unusual proportion of its nitrogen from the air, in that respect alone it is worthy of our consideration. We feed it to our breeding ewes and consider it to be very valuable for them. The little lambs will learn to eat it very young. After a series of experiments by Lawes, he gives clover a high feeding value for sheep, ranking it even with oil-cake. If we wish to renovate our worn-out farms and make them pay as we go, I believe that we shall do no better than to use clover.

A word for irrigation. As some indication of faith in it, allow me to say that there is a large part of the farm on which I am placed that has been irrigated for over twenty years, and has furnished a large amount of fertilizing matter for the farm above the level of the irrigating waters, the source of which is a pond. Why it is that the farmers of New Hampshire allow fertilizing materials to sweep past their farms and bury themselves in the ocean, without trying to intercept them by testing the value of irrigation, I do not know. Certain it is that running water holds in suspension nitrogen and saline matter, with some other gases, and when it is sprayed over the ground it yields its impurities to the soil.

There are multitudes of farms in New Hampshire that from this source might receive more of the elements of nutrition than

their owners would dare to buy, and that too very cheaply. Dana estimates that for the year 1868 there were rolled down in the waters of the Merrimack eight hundred and thirty-nine thousand one hundred and eighty-one tons of salt and geine.

In closing allow me to remark that I have full faith in the belief that the farming interests of our State, under a proper system of husbandry, may be made lucrative. Certain it is no occupation of mankind, in the fullest discharge of its varied duties, calls out and tends to develop so many of the faculties of body and mind as farming. It will pay tribute to superior intelligence and skill, even in New Hampshire.

AGRICULTURE OF TOWNS.

STATEMENTS OF TOWN OFFICERS.

In the two preceding volumes issued under the direction of the Board of Agriculture, details of farm interests have been made by intelligent gentlemen in many of the towns of the State, voluntarily. There has been no statute requirement directing the Secretary of the Board to make inquiries, and none making it the duty of any town officer to communicate information. At least, there was none until last year, when the Legislature enacted a bill, specific in its nature, providing for sending out a series of interrogations by the Secretary, and making it obligatory on the selectmen of towns and the assessors in cities, to inquire and give replies, so far as practicable, to questions touching farm interests.

On the 20th of March, the following series of questions was mailed to the selectmen of every town in the State asking for information on different subjects connected with the farmer's occupation :

SECRETARY'S OFFICE, CONCORD, N. H.,

March 20, 1873,

To Selectmen :

At the last session of the Legislature it was voted by the House of Representatives that a resolution under discussion, in regard to investments in farming, be referred to the Secretary of the Board of Agriculture, with the request that, on proper investigation, he prepare a statement, setting forth as definitely as he may be able, the profits of capital employed in agriculture.

At the same session a law was passed in regard to the Board of Agriculture, containing the following provision :

"The Selectmen or Assessors of the several towns and cities of the State are hereby required to make inquiries at the time of taking the inventory in April of each year, and prior to the first day of May following to respond to interrogatories previously furnished by the Secretary in regard to the results of agricultural investments and labor, and the prosperity of the farming population."

In accordance with what I deem to have been the intention of the Legislature, and in order that we may co-operate in a work designed for the public good, I submit the accompanying questions with the expectation that no town will fail to be fully reported. In a few instances circulars are sent to gentlemen who are not officers in town organizations, with the view to create an interest in the work.

Any suggestions regarding the general subject of agriculture, besides topics named, or any facts that will be of value in the reports of the Board will be thankfully received.

The Secretary desires to correspond with some intelligent gentleman or lady in every town, in regard to farm interests. Please suggest a suitable person in your town. It is especially requested that selectmen and all town officers endeavor to create an interest in agricultural pursuits, encourage a more general reading of books and newspapers devoted to the subject, and induce farmers and others to engage in the discussion of rural topics at Farmers' Clubs, and other agricultural meetings. The Board further express a desire that samples of grain, seeds, grasses, weeds, shrubs, woods, and especially insects, whether noxious to farm crops or not, be forwarded in a safe and convenient form to the rooms of the Board for preservation and as a source of interest.

I desire that you give responses on sheets separate from this, referring to the questions by numbers; affix your signatures; add the name of your town, and at the earliest day after completing your inventory, "prior to the first day of May," enclose your statement in the stamped envelope accompanying this circular, and address to

Yours truly,

JAMES O. ADAMS,

Secretary Board of Agriculture.

INTERROGATORIES.

ARE FARMERS MAKING MONEY?

QUESTION 1. What farmers in your town are making money solely by farming, at the same time keeping up the value of the farm, and supporting their families? If any, in what manner? If none, why?

THE PER CENT. FARM CAPITAL PAYS.

QUESTION 2. Estimating the cost of labor, including the work of farmers and their families at its true value; the cost of fertilizers, seeds and grains furnished; the amount of taxes, the wear and tear of implements, the repair of buildings, and all absolutely necessary expenses except support of the family and the education of children; what per cent. on the cash value of the farms and the necessary appurtenances, will the products of the soil, the growth of stock and wood, and the permanent improvements pay? In other words, place the farmer with reference to his investments on the farm in the same relation as the mechanic occupies to his shop and machinery, or the

merchant to his stock in trade, and help us ascertain if the farmer labors under disadvantages. Give exact figures in regard to farm incomes so far as you can obtain them. Tell us whether farmers as a body are more intelligent, live in better buildings, have more conveniencies or luxuries than formerly. Have they more money at interest? Do they work harder and are they generally more economical?

LEAVING THE FARMS.

QUESTION 3. What proportion of the sons of farmers in your town leave the farm for trades, commercial pursuits, professions, and other occupations? What proportion of farms have been abandoned to wood and pasturage or been united with other farms within the past ten years? What causes these results, and what is the effect on the prosperity of the town.

IS THE FEVER ABATING?

QUESTION 4. Are farmers this spring more than ever inclined to leave their pursuits, or do they still have confidence in the power of the soil of our State to compensate the farmer for his efforts?

EQUALITY IN TAXATION.

QUESTION 5. In the assessment of town taxes, how do you appraise farms, compared with city or village residences, or manufacturing property? How does the valuation of the farmers' lands, stock, and other property compare with that of merchandize, stocks or manufacturing interests? How near their true *cash* value do you make your appraisal in each class? Has there ever been any discrimination in favor of the farmer or against him on the part of appraisers for taxation?

NEAT STOCK.

QUESTION 6. Who in your town own pure blood neat stock, and of what breeds? Are there more or less neat stock in town than at any former time? How about the value per animal, is it greater or less than in former times? If the value has been increased, in what proportion? What diseases have affected neat stock within the past year?

HORSES AND THE HORSE DISEASE.

QUESTION 7. Who own stock horses of value in the town, and what of their blood, name and characteristics? What proportion of horses suffered from the horse disease last fall and winter? What was the ratio of fatal cases, and what is the present condition of those which recovered? Have they depreciated in value, and how much?

SHEEP AND DOGS.

QUESTION 8. Who are the leading sheep breeders in town, and what breed do they keep? Do they think it pays to keep sheep better than it does to keep other stock? Have sheep suffered much by disease? How many dogs are taxed in the town, and what is the value of sheep annually killed or maimed by dogs?

FORESTS.

QUESTION 9. What proportion of the area of the town is covered with forests? What part of the forest area is *old* growth and what *new*, or under twenty years of age? Is the amount of wood and timber in town increasing or diminishing, and at what rate? Is the lumber cut in town manufactured there or exported? Into what articles, if any, is it manufactured? Name the valuable varieties of trees for wood or timber in the town. Have you any special varieties not common to other sections?

FARM CROPS.

QUESTION 10. What are the leading farm crops in town, and what valuable new practices are adopted by the farmers? Name all sources of income to the farmer that the town affords.

FRUIT.

QUESTION 11. What kind of fruit, large or small, produced on trees, shrubs or vines, are found in the town, and what is the average value of the amount?

THE LABOR QUESTION.

QUESTION 12. What is the demand for farm and farm-house labor in your vicinity—that of men and women? and is there an adequate supply? What hints can you give in regard to this important requisite to the success of the farmer?

Notwithstanding the statute requirement, but a small proportion of the towns was reported at the expiration of the time prescribed by law. A special request was made of town clerks, to assist the selectmen in their duties, and still not one-half of the towns made a response. A third application was made to members of the Legislature to present such facts on the topics proposed as they could command; this increased the number of towns reporting, to nearly one hundred and fifty, leaving fully one-third unrepresented in this volume.

It has not been from a want of respect for the law that this neglect has existed. Nor has it been for lack of confidence in the usefulness of the Bureau of Agriculture, nor from an indifference to the prosperity of the farming interest. It is due rather to the difficult task required of officers, who are unaccustomed to investigate, give facts and draw conclusions. The requirement has too often transcended their ability, indicating the importance of early and constant practice in giving written expression to our thoughts and in communicating our experience to others.

But notwithstanding the deficiencies named, we have a larger schedule of official papers, from different sections of the State, than were ever before collected on agricultural topics. A portion of these which appear to be fullest in detail, and present the true condition of the towns, are given without curtailment. Others are condensed into the most compact form consistent with clearness of statement, and the presentation of facts.

ROCKINGHAM COUNTY.

ATKINSON.

[Reported by the Selectmen.]

1. There are but few farmers in this town who go into farming to any great extent, and there are but very few of them that are making money, owing to the high rate of taxation to which the farmer is subjected. The number who make farming an occupation is fifty-five; the number who make farming and shoemaking an occupation is thirty; mechanics, fifteen; traders, one; one lawyer, no doctor, and one minister of the gospel.

The taxes in this town for the year 1873, on a poll, are \$1.80, and have been within the last ten years \$4 on a poll. Our town debt is nearly \$8,000.00. Total valuation \$296,934. Nearly all the valuable timber, and also a large quantity of wood has been cut and carried from town, some lots at low prices to get rid of taxes, the owners living out of the State. Thirty thousand dollars value at first sale has been cut and carried from town, which has reduced our valuation nearly that amount. Most of the farmers in this town, by hard labor and economy, pay expenses. Men who have families of children locate on farms in this town in order to gain the advantages of our academy, and to shun the vices of larger places, and not for the money that they expect to gain by farming. And when our young men and women acquire an education, they leave the farm as teachers, or seek some more lucrative business than farming, leaving the middle aged and old men to take care of the farm and do what they can, and leave the rest undone, as the income of the farm will not pay to hire labor and pay the taxes, and other bills. The farmer, when his

farm has become exhausted, needs capital to hire labor and buy manure to bring his farm back to its former state of fertility. The farmers in this town own their farms, but have not the capital to buy fertilizers, hire labor, and improve their farms to any great extent. The worn out land will eventually grow up to wood and timber, and go into the hands of those who have been exempted from taxation.

2. We think that the merchant and the mechanic have decidedly the advantage, so far as income is concerned. Farmers in this town are agreed that it does not pay to hire labor to raise corn or potatoes to much extent, and the farmers think that grass pays the best of any crop that we raise. We can obtain no figures in regard to farm incomes. We think that farmers are as economical and industrious as formerly, and that they live in better buildings, and have more conveniences than formerly. They have more money at interest, but this money does not belong to the many, but to the few who had money at interest before the war.

3. Seven-eighths of our sons leave the farm for other and more lucrative occupations. There has not been one per cent. of our farms abandoned to wood and pasturage for the last ten years.

4. There seems to be no fever in this town. The farmers seem to be content to do the best they can, and wait for the "good time coming," when the farmer will stand on an equality with the capitalist, so far as taxes are concerned, and when that time comes the farmers in this section of the State can and will make farming pay.

5. We think that farms in this town have been appraised from thirty-three to fifty per cent. higher than village or city residences. We endeavor to appraise the farmers' lands, stock and other property at their cash value, or what they could be sold for at public auction, while merchandise and other interests are of such a nature that we must of necessity rely much upon the statements of the owners as to their value; we believe that they are appraised below farming property from twenty-five to fifty per cent. There is no intention, on our part, to make any discrimination either for or against the farmer. We intend to appraise his property at its true cash value, while merchandise must be appraised upon the word of the owner.

6. We have no pure bloods in town. There were in 1863, 388 head of neat stock; in 1873, 355 head of neat stock; decrease in

ten years, 33. The value per head is less than in 1863. No diseases have affected our neat stock within the past year to any extent.

7. We have no stock horses in town. Three-fourths of the horses in town suffered from the horse disease; there were no fatal cases. There has been no perceptible depreciation in the value of horses in this town.

8. We have but two men in town that keep sheep; one has two, the other has eight. They have not suffered from disease. Forty-one dogs are taxed in town. A very few dollars will pay the damage done to sheep per year in this town by dogs.

9. More than one-third of our town is covered with growth, and perhaps two-fifths of that is more than twenty years old; but there is very little valuable old growth timber standing on that. The amount of wood and timber is diminishing at an alarming rate. We have no means of ascertaining the amount per year. The wood and timber are exported. There are but a very few valuable timber lots in town. For valuable varieties of growth for wood and timber, we have pine, oak, ash, hickory, maple and birch. We have no special varieties.

10. The leading farm crops in this town are hay, corn, potatoes, oats and apples. The most valuable practice adopted is that of selling milk. There are four teams that carry some fifty gallons each to the city of Haverhill daily, and there are three teams that carry about the same amount each to the city of Boston daily, making quite a little income for those farmers that sell their milk. We are not aware of any other new practices, other than using new and improved tools and farm implements.

11. We have apples, pears, quinces, peaches, plums, cherries, grapes, cranberries, gooseberries and currants. We have no means of knowing the value or the amount.

12. Reliable help is not readily found in this vicinity, and the demand is far greater than the supply. But when we obtain reliable help, either male or female, we prize it so highly that we retain their services as long as possible. We think that the farmer attempts to cultivate too great a breadth of soil; that he spreads his fertilizers over too much space, and makes out about the same as the hen did that attempted to sit on a barrel of eggs; he spoils his farm and himself too. It costs as much to cultivate an acre of poor soil as it does an acre of good soil. The depreciation of our soil arises from the fact that we take more from it

than we give to it. If our farmers would give to their soil as much as they take from it, and let the remainder grow up to wood and timber, they would be more prosperous, and consequently more happy than they are under the present state of things.

AUBURN.

[Reported by the Selectmen.]

1. No farmers are making money solely by farming; the reason is that the expenses are too heavy.

2. Not over two per cent. per annum is paid by farm capital; the farmer labors under disadvantages, and, as a general thing, does not come out any more than square at the end of the year, after supporting his family, on account of high taxation and the want of a tariff to help him.

3. Three-fourths of the sons of farmers leave the farms for cities; twenty-five per cent. of the farms are grown up to pasture; young men think they can do better elsewhere than at home.

4. About the same ratio still exists, as heretofore.

5. As near as we can learn, property in country towns is taxed higher than city property; we intend to tax it at what it would bring at a forced sale; taxation operates unjustly to the farmer, under the present laws.

6. We do not know as there is any blood stock in town; less stock now than formerly; the value per animal is about the same as in former years; no disease.

7. No stock horse in town; four-fifths of the horses suffered from the disease, none fatal; they have depreciated in value in many instances.

8. George G. Griffin, Pike Chase, and a few others, keep sheep; they think it pays; no particular breed; no disease; fifty dogs; about two per cent. of the sheep are killed by dogs.

9. Sixty-five per cent.; old growth, five per cent.; under twenty years of age, fifty per cent.; grown-up pastures, ten per cent.; at a rapid rate; exported; mostly white pine.

10. Corn and potatoes; here are no new practices; clearing off wood and timber, and shoemaking, are the chief pursuits.

11. Apples; cannot tell how much in value.

12. There is a good demand for men and women — there is not enough of them.

BRENTWOOD.

(First Report, by the Selectmen.)

There is not a farmer in town that makes money by farming alone. More than seventy-five per cent. leave the farm for the city. There is not more than one per cent. of soil been abandoned to wood and pasturage.

We make appraisal of all property as near its value as we can.

Rockingham County Farm has some pure blood neat stock that is Durham. Otis Bartlett has the Jersey cows. There is about the same stock that there was last year. About ninety per cent. of the horses suffered from the horse disease last fall, not more than one per cent. proved fatal. They have fully recovered.

The leading sheep breeders are Samuel Morrill, Sarah M. Morrill, Frederick Robinson, George O. Sanborn, W. T. Bean. The breeds are principally Leicester. The number of dogs is seventy-two. The value of sheep killed is not more than ten dollars a year. The amount of wood and timber in town is diminishing very fast, the principal part is manufactured into boxes. The most valuable lumber is pine.

The leading crops in town are corn, potatoes, oats, barley, and rye. The demand for farm labor is very great, of both men and women.

(Second Report, by Citizens.)

The farmers of Brentwood have many causes of discouragement; among them are the high prices and scarcity of labor, and the low prices of farm products. The town is free from debt and has a surplus of \$4,500 on hand.

About fifty per cent. of the young people leave town for other purposes than farming.

There is rather more land taken up for improvement than there is abandoned to wood and pasturage.

The appraisal of property is made as near the value as possible.

We have grade stock of different breeds scattered all over the town. The Rockingham County Farm has a full-blood Durham bull. Jona. W. Robinson has six fine Jersey cows of high grade, also one 3-4 Holstein bull; A. W. Dudley has six grade Jersey and two Devon cows. There is quite a number of other farmers who have grade Jerseys and Devons.

There are several farmers in town who make a good living, and something to deposit in savings banks or other institutions besides. Among them are Samuel Morrill, Andrew G. Dudley, Jeremiah Dudley, Henry Swazey, Frank H. Rowell, A. W. Dudley, Jona. W. Robinson, Josiah Robinson, Dudley R. Parshley, Asa B. Robinson, Frederic Robinson, Sarah Morrill, J. B. T. Graves, William H. Veasey, George O. Sanborn, John Brown, Samuel Thing, William B. Jenness, Thomas Tewksbury, John W. Dudley, John A. Robinson, and a number of others. Joseph T. Smith and sons do a large business in greenhouse plants and seeds. Thomas S. Robinson and E. P. Robinson do quite a business in market gardening.

There are several large and fine apple orchards in town. Among the largest fruit growers are John Brown, William Kimball, William T. Bean, Frederic Robinson, Asa B. Robinson, H. J. Robinson, Arthur W. Dudley and William B. Jennis.

The canker worms have been quite destructive in some parts of the town, for the past four or five years, but are not near as numerous as in some of the adjoining towns.

The main crops raised are corn, potatoes, oats, barley, rye and grass. Grass is the main crop. But very little wheat is raised. Some of the farmers in the eastern part of the town have for the past four years sowed a little of the Arnautka Spring Wheat, which is of Russian origin, and came through the Patent office. This, under favorable circumstances, has succeeded very well. Several farmers in this part of the town make a specialty of the milk business, and deliver their milk on board the cars at Exeter for the Boston markets.

Upon the whole Brentwood will compare favorably with any of the adjoining towns.

CANDIA.

[Reported by the Selectmen.]

1. There are but a few farmers that are making any more than a good living. One reason is, our taxes are so high; another reason is, farmers neglect their farms, and do not devote the time and money to them that they would to other business. For these reasons they do not pay the profit they would if a different course was taken.

2. We think but a few farms in this town pay any per cent. above the support of the family; as a general thing, farmers have

their buildings more convenient than formerly; have more conveniences, such as sewing-machines, in the house, and mowing-machines, etc., out doors; we think they have more money at interest than formerly; there is not so much economy practiced with farmers as in former times.

3. We could not say what per cent. of our young men leave the farms for other business, but it is certain a great many of them do; the reason they have for going is, they think that farming is hard work, and there is not money enough in it for them; in many cases they would be better off to stay on the farms.

4. Is the fever abating? We could not say as to that, but we should think not much.

5. There is no equality in taxation; farmers have to pay a large proportion of the taxes.

6. There are a few pure-blood Jersey cows in town; the stock has been cut down for the last few years, on account of short hay crops; there is more stock in town than there was one year ago; no disease among neat stock for the past year.

7. There is no stock horse kept in town; we depend on horses traveling through town, mostly; we think about every horse in town suffered from the horse disease last fall; no deaths as far as we know, from the disease; most of the horses that had the disease are in good condition now.

8. We have a few nice flocks of sheep in town; Moses F. Emerson has the best flock of South Downs numbering twenty-two; we have about three hundred sheep in town of different kinds; sheep pay better than other stock; we do not suffer much from dogs; seventy-eight dogs taxed for 1873.

9. A great portion of the heavy wood and timber lots have been cut over; the lumber is sawed into boards and dimension stuff and exported. The trees for wood are birch, beech and maple; for timber, pine and hemlock; the old growth pine is all gone.

10. The leading farm crops are hay, corn and potatoes; wheat, oats, and barley are also raised.

11. We have some very nice orchards in town that are in a bearing condition, and young orchards that are growing. Strawberries are also cultivated by a few in town.

12. Good help is scarce; there is more demand than supply.

CHESTER.

[Reported by C. S. Wilcomb.]

1. Very few farmers, if any, are making money solely by farming; if we can support our families, give them a fair education, keep our farms and buildings in good order, pay taxes and come out even at the end of the year, it is as well as the farmers, as a whole, are doing in our town. Why? The high price of labor compared to the products of the farm.

2. This is a hard question and I refer you to the answer to question one, in part. The farmers are more intelligent, read more than formerly. There are about four hundred weekly papers taken in town now, whereas, thirty years ago not more than forty or fifty were taken. Our buildings are better, have more conveniences. Many have more money at interest.

3. Probably three-fourths of farmers' boys leave the farm for other occupations. Should think ten per cent. tillable land had been given up to pasture and woods within ten years. Cause, lack of labor and manure to cultivate at a profit, preferring to concentrate our labor and manure on a few acres of the best land and abandon the poorer and more distant to pasture and wood. Larger crops are produced with the same quantity of manure and less labor, thus giving a larger return for capital invested.

4. The farmers are generally contented, and but few have a disposition to leave the farm.

5. It is intended that all property shall be assessed equally, about two-thirds its true cash value.

6. Our neat stock is mostly grades and natives, a few pure blood Jersey and Ayrshire cattle. Less in number than formerly, and of more value per animal, say twenty per cent. Probably as many cows as formerly, but less oxen, farmers doing their work with horses mostly. No diseases the past year.

7. No stock horses in town. Nearly all horses suffered from the horse disease; only two or three deaths and these were cases of animals of little value. Horses are in as good condition as before the disease.

8. But few sheep are kept; mostly South Down and native; are considered profitable stock for those who have suitable pasturage.

9. About one-half the area of the town is covered with wood and timber, one-half of which is over twenty years growth.

Wood is increasing but timber is diminishing at a rapid rate since the introduction of steam-mills. Most of the lumber is exported. A small quantity is manufactured into shoe boxes, barrels, pails and kits. White pine predominates, with considerable chestnut, hemlock, white oak, maple and beech.

10. Fruit, hay, corn, potatoes, oats and barley are the leading crops. Principal sources of income are apples, lumber, hay and milk.

11. Apples are the main fruit crop, yearly average about \$5000.

12. The demand for labor is small and the supply, ditto, the farmers preferring to do what they can themselves and let the rest go, from the fact that labor on the farm will pay about \$1.00 per day, and hired labor costs \$1.50, or fifty cents per day more than a man earns or his labor will produce. What we farmers want is cheap labor; give us this and we will improve our farms, drain our low lands, and make these beautiful hills and valleys produce abundantly.

DANVILLE.

[Reported by John Elkins, Chairman of Selectmen.]

1. I don't consider that we have any farmers in town who make money solely by farming. Those who pretend to be farmers have to resort to other business by which to obtain the means to pay the high taxes to which every town is subject, and to pay for the necessities of life. Persons who happen to have wood and timber lots, in connection with their farms to resort to, can manage to get money enough to pay their taxes, etc., and make a fair living, while those who have not these means, often have to run in debt for money to pay their taxes and other necessary bills. The high rate of taxation is a great burden to our community. The rate per cent. of our money tax, for this year, is one and two-thirds per cent. Poll tax, \$1.67. Our town debt is nearly \$13,000, besides the assets.

Total valuation of our small town, including real and personal estate, \$200,000. Our timber lots are nearly exhausted and those who have converted their timber lots into money, or who had money beforehand, have it invested where the assessors can't meddle with it, and what or who is going to pay the taxes in the future, is more than I can tell. Our farms, in my opinion, are not paying one per cent.

2. As I stated in answer to question 1, our farms do not pay one per cent. Farmers about all agree that it does not pay to raise corn at the prices it bears at the present time, and pay the prices which the day laborer demands for his work. I think we have no farmer in town who raises enough corn for his own use.

As to our buildings, I think they are, as a general thing, in better condition than formerly, perhaps as good or better than they will average in any country town in our county, and they were not improved by the profits of farming by any means. As to luxuries, perhaps they have more than formerly and perhaps more money at interest, but not obtained merely by farming.

3. I think three-fourths of our young men leave home for better paying business. Probably not more than six per cent. of our farms have been wholly abandoned; consequently farming business is diminishing in the ratio that farms are abandoned.

4. Farmers this spring are more inclined to leave their pursuits than before.

5. We endeavor to make taxation equal, but I presume farms (that is, tillage lands and pasturing) are assessed higher than most property. There has never been, to my knowledge, any discrimination in favor of or against the farmer in regard to taxation.

6. We have no pure blood neat stock, I believe. As to quantity we have not half the oxen as formerly, and not quite as many cows, but of a superior quality — mixed blood of Jersey, and some of the Durham, mixed. No prevalent disease among our neat stock during the past year.

7. We have no stock horses owned or kept in town at the present time. As to the horse disease last fall, I think about three-fifths were affected by it. The number of horses taxed last year was eighty-three; number this year, ninety-seven; number of fatal cases of the disease last fall, five. Those recovered, I think, depreciated in value some eight or ten per cent.

8. We have not much interest taken in regard to raising sheep. Only thirty-six were taxed this year, and those rather of an inferior quality. No particular disease among them. The dogs we have taxed this year, thirty-one. The damage to sheep by them is small; we have never paid any but in one instance, and that in 1870, I think, and which was about thirty dollars, consequently, we appropriate most of our dog tax for school purposes, which is about all the benefit we derive from keeping dogs. Pretty good thing, this dog tax!

9. About one-half of our area is covered with wood and timber, mostly young, growing wood. As we have three steam mills in town our heavy timber lots have suffered sadly from the woodman's axe. We have now and then an old-growth pine, but they are few and far between. Timber for sawing purposes is diminishing, some million feet per annum. Wood, we think, grows nearly as fast as it is cut off. Most of the lumber is manufactured into shoe boxes, here in town, for Haverhill market. The varieties, for sawing purposes, are mostly pine and hemlock. Varieties for wood are beech, birch, maple, oak, pine, hemlock and ash. Our town has been celebrated for its beech wood, and one portion of it goes by the name of Beech Plain.

10. The leading crops are hay, corn, potatoes and apples, although we raise wheat, oats, barley and rye. There were raised in town, last year, some thirteen hundred and fifty bushels of corn, three thousand bushels of potatoes, fourteen hundred barrels of grafted apples, and some honey. Our town is quite small, being about four miles square, containing about five hundred and fifty inhabitants, and about one hundred and sixty voters.

11. We have no means of knowing the value of fruit raised, more than I stated in answer to question 10.

12. The demand is good, and the supply is about equal to the demand, at fair prices. Men get from one dollar to a dollar and a half per day and boarded, except in haying, and then more, of course. Where they work by the month, they get from twenty to thirty dollars per month; females from two to four dollars per week. Our small town is sending out quite a number of school teachers this spring. Some ten are now engaged in teaching, from two to seven dollars per week and boarded.

DERRY.

[Reported by the Selectmen.]

1. There is occasionally a farmer who makes money by industry and economy and attending to his business.

2. We think a farmer that has \$4,000 invested in his farm, stock and tools can make as much money as the store-keeper that has the same amount of money invested in store and goods. In regard to the income of the farms there is sold from town on an average about \$28,000 worth of milk during the year, about \$10,000 worth of fruit of all kinds, about \$2,000 worth of vege-

tables and \$2,000 worth of hay. We think that farmers are more intelligent as a class, also live in better buildings, have more conveniences and have more money at interest. They do not work any harder and are not so economical as formerly.

3. About one-third of the young men stay at home. One-fiftieth part of the farms are abandoned, caused by fires or bad management.

4. Farmers in this town feel more encouraged this spring than formerly as there is a railroad in progress through a part of the town.

5. We intend to appraise real estate, stock, and all other property, a little less than it would bring at public auction. We cannot compare with cities, not being good judges of city property.

6. One herd of Ayrshires and one herd of Jerseys are owned in town; about the same number of cattle as in former years. The value is ten per cent. greater. There are no diseases.

7. Nine-tenths of the horses were affected by the horse disease. The present condition of the horses is good. Not any horses died of the horse disease that were of any value.

8. No leading sheep owners in town; the sheep mostly cossets. About two hundred in number, pay full better than other stock; no diseases. About one hundred dogs taxed. Value of sheep killed by dogs annually ten dollars.

9. About one-fifth of the town is covered with forests; about three-twenty-fifths under twenty years of age. The wood and timber have diminished. Most of the timber is exported. Pine, oak and chestnut are the most valuable varieties of wood; no especial varieties.

10. All the sources of income to the farmer are hay, corn, potatoes, grain, vegetables, fruit, milk, also wood and lumber.

11. The kinds of fruit are apples, peaches, pears, grapes, currants, gooseberries, strawberries, blackberries, blueberries, etc., value ten thousand dollars.

12. The demand for farm labor is not great. There is an adequate supply.

EAST KINGSTON.

[Reported by the Selectmen.]

1. There are no farmers making money solely by farming besides supporting their families and meeting other necessary expenses. The reason is the taxes and labor are so high, not so much work is done on the farm, and consequently less crops are raised.

2. In our opinion, farm capital does not pay any per cent. We consider a man a good farmer if he pays all bills, such as taxes, hired labor, furnishing tools, fertilizers, repair of buildings, etc., solely from the farm. Farmers are better read, their early educational privileges better, and, consequently, are more intelligent than formerly. Their buildings are in better condition than forty years ago. Many of them do some other business a part of the time, such as shoemaking, teaming, butchering, or carpentering, etc., from which they derive some money. The success in farming arises more from small savings than from any particular large source of income. We have no means of approximating very near the money invested by the citizens of this town. In our opinion there is more than twenty years ago. It was formerly taxable, now it is invested in government bonds, banks out of the State, and railroads, so the town cannot reach it for taxation. If money is invested in farms and farm stock, every dollar is taxable at the per cent. of town taxation. If invested in bonds, banks or railroads, they get from five to ten or twelve per cent. over all taxes. Some of our wealthy people do not pay one cent of town tax; some a poll, only, and still others, but little more. We see no reason why railroads should not pay as high per cent. tax as other property. Taxation one and six-eighths per cent. for 1873. Farmers do not work as many hours as twenty years ago. Have improved tools and machinery, and, perhaps, enjoy more luxuries than formerly.

3. About three-fourths of the sons of farmers leave the farms for other pursuits. We are not aware of more than two farms that have been abandoned to wood and pasturage, or united to other farms within the past ten years.

4. We are not aware of any farm owner leaving his farm this spring for other location or pursuits.

5. We have no village in town. Farms are not appraised as high as the owners would be willing to sell for if they intend spending their days on them—but we think any ten adjoining

farms and the stock on them would not sell for more at auction at the same time than they are appraised for taxation.

6. We have no pure blood neat stock. We have about two-thirds as many cattle as ten years ago, but it is inventoried higher in proportion. It has been free from disease the past year.

7. We have no valuable stock horses. The horse disease last fall was universal. We know no fatal case of any horse of value. The present condition of horses is as good as before the epidemic.

8. There are no leading sheep breeders; sixty-nine only are inventoried, and they are of no particular breed; seventeen comprises the largest flock. No disease the past year. The profits of sheep husbandry depend upon the conveniences for keeping them; lambs pay more than wool. Forty-three dollars were assessed on dogs, and twelve dollars damage drawn on dog tax last year.

9. One-tenth part of the town is woodland; three-fifths of that over twenty years old, and two-fifths less than twenty. The wood and timber are fast diminishing. Agricultural writers say, "spare the forests;" taxes and interest "say, "slay." Which shall we obey? Pine and hemlock with some oak are the leading varieties. Three brick yards are in operation in the north part of the town requiring all the wood cut off.

10. The leading farm crops are hay, corn, potatoes, barley and oats, in the order here given. The chief sources of income are from wood and lumber, careful husbanding of farm crops, milk and poultry.

11. Winter and cider apples with a few pears are the chief fruit produce. Baldwin is the leading winter apple.

12. There is not a great amount of hired labor except of people living in town. Farm laborers get about twice the pay of twelve years ago. The brickyards are supplied by men from Canada and Nova Scotia.

EPPING.

[Reported by N. G. Plummer.]

1. About ten per cent. of the farmers are making money solely by farming, improving their farms and supporting their families.

2. Three per cent. They live in better buildings and do not work as hard as the mechanic, taking the whole year as an average, are more economical and save their money.

3. Ninety per cent. of farmers' sons leave for large cities to learn trades, commercial pursuits and professions of which but few

do as well as their fathers did on the farm. Very few farms have been united or abandoned.

4. About the same.

5. Appraised about the same.

6. Some few Durhams and Jerseys. Neat stock reduced nearly one half from ten years ago; value higher.

7. Very few horses raised in town. Nearly all horses had a mild attack of the horse disease last fall, all recovered, with no fatal cases.

8. Sheep pay better than any other stock, but few are kept, owing to the dogs, which destroy about \$100 worth yearly. There are about seventy-five dogs taxed.

9. About twenty per cent. of the town is covered with forests, with no old growth. Lumber exported.

10. Hay, potatoes and fruit.

11. Mostly apples, of which, including cider, six thousand dollars worth are exported.

12. The demand for labor of both men and women is one hundred per cent. more than the supply.

FREMONT.

[Reported by the Selectmen.]

1. Not more than one or two farmers claim to make money by farming. Have no knowledge to answer more definitely.

2. Should not say that capital invested in farms paid two per cent.; cannot give exact figures. Farmers live in better houses than formerly. No means of ascertaining money at interest unless some business man in the neighborhood fails, then farmers are generally the losers. Farmers work less than formerly and have economical habits.

3. The greater part of the sons of farmers leave the farm for the reason that they can make more money in other occupations. No farms lately abandoned.

4. Farmers have full confidence in the power of the soil of our State to produce good crops; but crops at present prices do not generously compensate the farmer for his efforts. Labor is too high to be profitably employed on the farm.

5. Endeavor to assess farms, village and manufacturing property equally for taxes. Do not know how city property is assessed. What is the true cash value of a farm, what it will sell

for or what it is worth for farm purposes? There is a wide difference here. A farm that would sell for \$3,000 would be taxed for \$2,000 and is actually worth about \$1,000 for farm purposes. That is if it was economically managed it would pay a fair interest on the investment at the latter price.

6. George F. Beede has Devon stock. About one-half as much stock as formerly. The value nearly double per animal. No disease among stock.

7. No stock horses in town. Nearly all of the horses suffered from the horse distemper last fall and winter. None died. All have fully recovered. No depreciation.

8. Those that keep sheep think they pay better just now than other stock. About thirty dogs usually taxed. Few sheep killed by dogs; more last year than usual.

9. Forty per cent. of the area of the town probably covered with forests; ten per cent. covered with large growth; no old growth; ten per cent. medium growth; twenty per cent. young growth. Timber diminishing; wood increasing in town. Most of the lumber manufactured in town into boot and shoe boxes. Lumber of extra quality exported. White pine and white oak the most valuable varieties of trees; no special varieties.

10. The usual farm crops cultivated; of grains not much wheat sown. Sources of income, stock, hay, wood and lumber.

11. Fruit sold, wholly apples; do not know the average value.

12. Very little demand for labor; supply adequate for men help; women help scarce. No light discernible on the labor question. One of two things must happen before farming is very successful; produce must be higher or labor cheaper.

HAMPTON FALLS.

[Reported by Warren Brown.]

1. From the manner in which farming is conducted this is a hard question to answer correctly. Our farmers are supporting their families by a mixed system of farming. Taking the town as a whole, we are, perhaps, keeping up the value of the farms. Farmers do not work all the time; for the time and labor bestowed, it probably pays better than any other business conducted in a similar manner.

2. This is another difficult question from the almost inseparable connection between the products of the farm, and the support of

the family. Much of the subsistence of the family is produced on the farm and is left out of the calculation entirely, when it is asserted that farming does not pay. None of our farmers keep sufficiently accurate accounts to determine this or the percentage on the capital invested. If the production of the farm and the support of the family could be separated as completely as in other business, I am satisfied it would not show to the disadvantage of the farmer, while in other business more money might be handled. The consumption of many articles of his own production by the farmer reckoned at their cash value, would, in a great measure, supply the deficiency. The overlooking of this has done much to produce uneasiness and discontent in the rural districts.

Farmers read more and are more intelligent than formerly. Agricultural literature and papers are more generally patronized. More interest is manifested in what is going on in the world. Many read a daily paper, and are as intelligent as an equal number of people taken from communities devoted to other pursuits. We have advanced in this very much within a few years.

Houses and farm buildings have been improved in appearance and convenience to a great extent. There is probably as much money at interest as at any former time. And farmers, as a class, do not work as hard as in times past, do not expose themselves as much to storm and cold, have more idea of comfort. Extravagant habits have increased, and are apparent in almost everything, and this is one reason why many have little money at the end of the year.

3. Formerly one half our young men left the farm for other business, of late less have done so. But few care to learn trades. Easy and genteel employments are sought by the young men of the present time. We were one of the few agricultural towns which had gained in population at the last census. There has not been any abandonment of farms, although several are for sale, yet on these the conditions of mowing, tillage and pasture are still maintained. Old pastures in many instances are growing up to wood.

4. Do not know as there is any more disposition to leave the farm this spring than formerly. There is discouragement from high taxes and the high price of labor. The sentiment of the town generally is in favor of curtailing operations, cultivating less, manuring heavier, with better care, grow larger crops, and in this way improve their condition.

5. In assessing taxes farms and stock have been appraised as near their real value as other property, with the exception of money at interest. In former years farms have been appraised for about two-thirds of what would be considered their real value. Farmers have had no discrimination in their favor. They have borne more than their share of taxation.

6. There are thoroughbred animals of Ayrshire and Short-horn cattle in the town. Breeding pure-bred stock has not been found a paying business. Premium stock is not the best for the average farmer. Not more than one in a thousand can realize fancy prices. The remainder must seek their profit from cattle, either from the sale of beef or dairy products; the improvement of either is found both laudable and profitable. Animals, throughout the town, are probably better than formerly: better cows and oxen are in demand. People are learning that good stock pays the best. There is less neat stock in the town than there used to be, from a number of causes, as depreciation of pastures, short hay crops from the effects of drought, and the substitution of horses for oxen in team work. Not half the oxen are kept that were formerly. There has been no prevailing disease among cattle during the past year.

7. There are some horses bred for speed, mostly of the Fearnought stock; there are several promising colts owned in the town. Not more than one half of the horses suffered from the horse disease. A few cases proved fatal. So far as I know those that were attended with care are now fully recovered and are not depreciated in value.

8. There are but few who keep sheep. One flock of South Down are the only pure-bred sheep in the town. Since the scarcity of hamp sheep are becoming more popular. There is a disposition on the part of some to change from other stock to sheep. Those who have had the best success think them as profitable as any stock. There has been no prevailing disease. About forty dogs are annually taxed. For a number of years there has been little loss of sheep by dogs.

9. About one-fifth of the area of the town is covered with wood. But little old growth. Large quantities of timber have been removed within a few years. It must soon become scarce. We have a large amount of young growth, a portion of which would become timber if allowed to mature. The larger part will only make wood. There is no prospect of the town running

short of fuel. Wood increases, timber diminishes. The lumber cut is not manufactured but sold to be used elsewhere. The white pine is our most valuable variety. Besides this we have oak, elm, ash, hemlock, hickory, beech, maple, bass, poplar, cherry and butternut. No special varieties, not grown in other towns, abound here.

10. The leading farm products are wood, hay, corn, potatoes, onions, milk, butter, poultry and eggs. Some market gardening done here. These are the principal sources of income. We have no practices which can be called particularly new. Of old practices, always good, and in order, which receive the approval of good farmers everywhere, some underdraining has been done; it is generally thought profitable. The majority believe in shelter for manure, the benefit of composting, the application of more to the acre; the general introduction of labor-saving implements and machinery; keeping things about the farm neat and trim. All of these are on the increase.

11. Of fruits, apples, pears, peaches, cherries, currants and strawberries, are grown. This town was once noted for the production of apples. The canker worm and unfavorable seasons have made the crop a failure of late years. Pears and small fruits not generally cultivated, but have done well. No considerable revenue is derived in this town from the sale of fruit.

12. Farm help is scarce and of poor quality, and too high in price to be profitably employed. Skilled labor is out of the question, it is not in the market. To make the thing equal, we should have either cheaper help, or better prices for our produce. While the laborer is worthy of his hire, we demand equally favorable conditions for the employer. Oppression in this respect is no more just on one side than on the other. With women, domestic service is unpopular and not to be engaged in if it can be avoided. The isolation and quiet of country life is unendurable to them. Farmers find it extremely difficult to get help in the house, in many instances an impossibility, the demand being largely in excess of the supply. Many have abandoned the business of farming on this account. The condition of things has been growing worse for a number of years. Unless something shall arrest its progress, and cause an improvement in this respect, it will have a bad effect upon the agriculture of this part of the country. Could we effect an improvement in this it would do much to make country life pleasant and desirable.

KENSINGTON.

[Reported by Weare N. Shaw.]

1. We find none; and the reason they give is high taxes and help, insurance, repair of buildings, and general expenses of living.

2. We find them more intelligent; have better buildings and have more conveniences than formerly.

3. But a small proportion have left the farm. No farms have been abandoned to wood and united with other farms.

4. They do not; but their confidence in the power of the soil to compensate them is rather on the wane, we think.

5. As far as we can ascertain, we appraise our property higher than they have done in the villages and cities this year. We mean by the selling price.

6. Stephen Brown and Joseph Brown own some pure Devon stock. About the same as an average for the last five years. The value of the animals per head is less than in 1866, '67, '68 or '69. No particular diseases the year past.

7. No stock horses in town. About one-half were sick last fall with the prevailing disease. Only one fatal case, we learn, most all as well as ever. No depreciation.

8. Daniel G. York, Ira Blake, Stephen Brown, John P. Lamprey, John L. Lamprey, Jonathan Fitts, Benjamin F. Lovering. Some South Downs, Cotswolds, and Natives. Nathaniel Gilman has the largest, forty in number, South Downs. Not much loss by disease. Thirty dogs this year. About \$20.00 a year damage.

9. About one-eighth part; about one-eighth of that under twenty years. The wood is decreasing, now, fast. Mostly sawed in town, mainly in boards and timber. Some pine, oak, locust and cedar. No special varieties.

10. Wheat, corn, potatoes, hay, barley. Not much wheat. Some poultry. Income of sheep, cows, poultry and vegetable, etc.

11. We have apples, some pears, a few peaches, quinces, very few grapes. Two thousand dollars would be a fair estimate.

12. The demand for farm labor is more than the supply in town. Farm house help an adequate supply.

HINTS ON THE ABOVE.

As far as our observation extends, those farmers in town who have had plenty of help in the house and out door, are about the only ones who have made any money by farming for the last few years. That is the great lack now of farmers, they do not work

the land enough by laying out extra labor on it, and the reason is they have not got it, and it does not pay to hire at present wages, which are \$20.00 per month and board for a man, equal to \$36.00 per month.

KINGSTON.

[Reported by M. J. French.]

The story of this town is briefly told. No farmer can do more than support his family; the per cent. profit is very small, scarcely calculable. But farmers live better, and have more conveniences than formerly. Young people nearly all leave the farm, and the exodus still continues. In taxation, it is the design to be equal, but farmers have the burden to bear.

In matters of stock, cattle are less in number, and not greatly increased in real value. Horses suffered generally, but are now apparently sound. There are but few sheep kept, though they are profitable. The income from dogs is eighty-five dollars this year. About one-fourth of the town is wood growth, which is growing less. The farm crops are common ones, with some fruit. Labor is high.

LONDONDERRY.

[Reported by the Selectmen.]

1. There are very few if any farmers in our town who are making money solely by farming, but there are many men who are carrying on other business in connection with farming and are improving their buildings and farms and making money.

2. We cannot give exact figures in regard to the per cent. farming capital pays, but take it as a conclusion that it pays less than many other occupations by the large number of farmers who leave their farms and go into cities and villages and work at some trade or go into business. We think as a rule farmers are more intelligent, live in better buildings and have more conveniences than formerly. One reason is the school privileges are better and they have an opportunity to get a better education and are therefore more intelligent. Another reason is there are men who style themselves farmers, but who have made their money by some kind of business or speculation (lumbering for instance,) and then return to the old homestead to spend their days and live by farming, but in reality to live upon their income;

then they repair their buildings in modern style; and as a natural consequence are a benefit to the neighborhood and town.

We think three-fourths of the sons of farmers leave the farm for trades and other pursuits. About one-tenth of the farms have been abandoned and are connected with other farms. As pasturing is scarce with us there is a demand for old worn-out farms when they can be bought for about one-third or one-half of their value, and then turn them out to pasturing; in a few years they will be covered with a young growth of wood.

4. We cannot say that we think the fever is *abating* but it is certainly not *increasing*.

5. We think that farm property is appraised on an equality with village residences or manufacturing property as to what it will bring in the market, but more than its proportion in the rate per cent. each pays its owner.

6. In regard to pure blooded stock Hon. Reed P. Clark has some very good grade stock and a pure blood Ayrshire bull. Charles S. Pillsbury, Esq., makes a specialty of Jersey stock. Elisha Smith, Esq., has a splendid specimen of full blood Devon bull, while Aaron P. Hardy is experimenting with different breeds in order to satisfy himself in regard to the merits of each, and can show you some splendid specimens.

7. There are no stock horses in town, and we are dependent upon the cities of Manchester, Nashua, Lawrence and Lowell for accommodation in that line. About seven-eighths of the horses were afflicted with the epizootic. There were no fatal cases where proper care was taken, and the horse allowed to rest and recuperate after the sickness and before he was put to work. There is no depreciation in value where the horse had proper care *during* and *after* the sickness.

8. There are very few sheep kept and those mostly cossets. Benj. F. Whorf has a good flock. Josiah F. Twist has a very good flock. The breed is generally rather crossed with a South Down, Merino or a Leicester buck; they are very free from disease. We usually find about one hundred dogs in town of the various kinds. The value of sheep killed annually will average from twenty to forty dollars.

9. There is very little old growth in town, and what there is stands trembling with fear lest the sound of the steam saw mill be heard within its borders, and then woe be unto old growth or new. Wood and timber are annually diminishing in town. Pine

timber is manufactured into boards and plank and then exported in its rough state, while oak timber is usually put upon the cars whole and carried to the shipyards of East Boston and Portsmouth. Different kinds, white pine, pitch pine; oak, white, grey, yellow and black; birch, white and yellow, and maple; these are the common and most valuable kinds. We have no special varieties not common in other sections.

10. The leading farm crops are hay, oats, rye, buckwheat, corn, potatoes and beans. Turnips and carrots are raised to some extent. Wheat is raised upon some farms, but oats is the rule. Hay and potatoes are the chief crops sold by farmers.

11. *Fruit.* Londonderry is noted for the quality and quantity of its apples; almost every farm is supplied with enough for home consumption and a fair proportion for market, and apples and cider are an evening treat among the descendants of the old Scotch-Irish settlers of Londonderry.

12. There is a demand for farm and farm-house labor in our vicinity, but the common farmer cannot afford to pay the price for intelligent help that it can command in other avenues of labor.

NEWMARKET.

[Reported by the Selectmen.]

1. None of our farmers will admit that they make money, because labor and taxes are so high.

2. In answer to this question, all farmers that we ask, reply that they can only come out at the year's end, square, and hard to do that. We do not think our farmers labor under any disadvantages compared with other occupations. We should say that the farmers in our vicinity are more intelligent, their buildings are in better condition, and have more conveniences, than in former years. Farmers will not acknowledge money at interest, for fear of being taxed for it. They, of course, would say they work harder than formerly, and they are economical.

3. Probably about one-twelfth.

4. They have confidence in the power of the soil, and hope for better seasons than they have had for the last three years.

5. We assess them as even as possible. In other words, if a village residence would sell or let for as much as a farm in the suburbs of the town, we tax it the same, and so with other prop-

erty. We endeavor to use all alike, as near as possible, in our appraisal.

6. William B. Small, Lafayette Hall, George W. Frost and Reuben French, have one Jersey cow each. We think that stock is less in town the present year than in any previous year. The value of the animals is about the same as last year. No diseases.

7. The following own stock horses: Daniel D. Perkins, a Morrill; George F. Walker, a Knox; Joseph F. Wiggin, a Draco. The proportion having the disease, seventy-five per cent. Fatal cases, two per cent. Have not depreciated much in value.

8. We have no leading sheep-breeders in town; the most of our farmers have a few common kinds, or breeds, and here and there a cosset. Have not suffered much by disease. From eighty to ninety dogs, not half of the tax applied to pay damages, the remainder goes for schooling every two years.

9. About one-eighth. Diminishing for the last three years ten per cent. Manufactured and exported both, about half each. That used in town for buildings, etc., that exported for buildings, boxes, etc., hard-wood timber for ships and bridges. Pine, hemlock, and oak.

10. The leading farm crops are hay, corn and potatoes; some vegetables.

11. Our principal fruit is apples; probably two thousand dollars per year.

12. I do not hear as there is any demand for labor, male or female. At the present prices of labor, farmers hire as little as possible.

NEWTON.

[Reported by the Selectmen.]

1. Only one man is regarded as making money solely by farming, or rather market gardening.

2. Farmers generally have a little money, and are good liver. Cannot tell the per cent. profit on farm capital.

3. Few of our young men work on the farm, most go into shoe-making.

4. The fever for leaving the farm is not abating.

5. We appraise all property at about two-thirds its real value.

6. No blood stock in town. The value of cattle about the same as usual.

7. Nearly all horses had the epizootic. None died. Present condition, good. No depreciation in value.

8. Sheep are not abundant. They pay well. None killed by dogs. The number of dogs taxed, fifty-six.

9. One-half the town covered with wood, old and new.

10. Crops, corn and potatoes.

11. Apples.

12. Farm hands scarce, as shoemaking pays well.

Newton has more than one hundred men to work in shoe shops and make from two to three dollars per day; some are at work on carriages and other mechanical works. Farming will not pay as well as other work here.

NORTH HAMPTON.

[Reported by John F. French.]

North Hampton is a purely farming town, bordering on the sea shore. The soil is generally good, kept under fair cultivation, and yields a reasonable remuneration for the labor and skill bestowed upon it.

1. A large proportion of the farmers in town are making a good living at their occupation. Not a few are doing more than this, either in the way of money at interest, or what is perhaps better still, in improvements on their farms. This is done by the production and sale of such products as are most adapted to the soil and markets, viz: hay, grain, potatoes and other vegetables, fruit, farm stock, dairy, poultry, wood, etc. Very few fail of fair success, and those almost invariably for want of skill, industry, or economy.

2. We cannot tell precisely — from two to six per cent.; averaging, perhaps, about three to four. Compared with other classes the farmer undoubtedly labors under some disadvantages, particularly as regards taxation, and the general bearing of congressional and legislative enactments. The remedy for this is in the farmer's own hands. No power in the country will compare at all with the farming power when rightly understood and wisely directed. When the farmer learns to guard his own interests as the mercantile and manufacturing classes do theirs, then, and not till then, will he be truly independent, and occupy that position and influence to which the noble nature of his calling entitles him.

Farmers as a body are more intelligent, live in better buildings, and have more conveniences and luxuries than formerly. They have more money at interest. It should be remembered, however, that a large per cent. of this interest comes from the slow but sure accumulations of past generations. Then also American farmers as well as Americans generally have fewer children than formerly, consequently property in many instances is concentrated in fewer hands, so that whether farming itself pays much or little at present, multitudes of farmers are growing more and more independent. Good farmers are substituting "horse power for man power, and brain power for muscle." As a whole, I think their labor is less wearing to the physical system than formerly. They have also changed their habits of living, modes of dress, and often pay money freely for style as well as utility. Still, no class of people work harder for the money they get, either in doors or out, than farmers and farmers' wives.

3. Many of the sons of farmers leave the farm for other pursuits, but enough usually remain to care for the homestead and relieve the parents. Our farms are not abandoned or united with others, and few of them are offered for sale. The town is not what might be termed money making, but fairly prosperous, and her people generally happy and contented.

4. The pulse is just sixty to the minute. No fever at all. We are stable, persevering, plucky and confident as ever. We stick to farming and denounce humbugs.

5. Our appraisers endeavor to be fair and impartial in their assessments. We think that farms are prized higher in proportion to their income than village and city property generally, and farm stock and other property, higher than merchandize, stock, or manufacturing interests.

6. There is little if any pure blood neat stock in town. There are more cows, but less oxen and steers than formerly. They have been free from disease, and I think the value holds good.

7. We have no stock horses of value in town. Some of our farmers are raising colts of the best breeds in New England, Black Hawk, Young Morrill, Fearnought, and Young Draco blood. Most of our horses suffered somewhat from the horse disease last fall and winter, but have recovered and are generally found as ever. Few, if any, died, and there is very slight depreciation in value at present.

8. But few sheep are kept and those of uncertain breed. To those who have conveniences for keeping, it doubtless pays. They have not suffered from disease nor been injured by dogs.

9. Much of our best timber has been cut, but a very fair percentage both of wood and timber still remains, possibly one-third or one-fourth of our whole area, and of this one-half I judge is over twenty years old. I think we hold our own to a very good degree. Our forests add very much to the beauty and value of the town. Considerable of the lumber cut is used in buildings, fences, lumber wagons, sleds, etc., but the larger portion is exported. Our wood consists of nearly all the valuable varieties, such as oak, ash, hickory, beech, birch, maple, pine, hemlock, spruce, cedar, and a little chestnut that was planted in the forest and raised with success. Samuel D. Lane, Esq., sells chestnuts from the trees of his own planting in this manner. Tree culture of the more valuable kinds should be greatly extended on our light soil, and more sterile lands.

10. The leading farm crops, as I have already indicated, are hay, grain, potatoes and other vegetables, beans, fruit, etc. One of the chief sources of income at the present time is the production and sale of milk. This business has grown up rapidly in this and adjoining towns for two or three years past. Nearly all our farmers have engaged in it. It is taken by the contractors or middle men, at the farmers' doors, and carried to the various depots for the Boston and Lynn markets. The present price at the farmer's door is twenty-six cents per can (eight and one-half quarts), for six summer months, and thirty-one cents for six winter months. By a new law in Massachusetts, [and now in our State] the cans must be sealed every year, and, if sold by the can, hold just two gallons each. Some of our farmers now make from forty to fifty gallons per day. Southern or fodder corn is raised extensively for fall and winter feed. We have a large number of good apple orchards in town, but the canker worm has made sad havoc with them. Some good orchards have borne no fruit of consequence, for years, and yet our farmers continue to battle against them with resolution and pluck, truly astonishing. Our trees were set too near, and interfere with each other. The poorer trees should be taken out, the remainder thoroughly pruned, the ground highly manured, and other crops raised on the same soil. The leading new practice on our own place, and one which I would recommend be stereotyped on the mind of

every progressive farmer in New Hampshire, is thorough tile drainage and the manufacture of an abundance of home made manure. Every young farmer starting in the business, should have as soon as possible a good barn cellar, even if he runs a little in debt for it, keep all the stock he can keep profitably, and place behind them or beneath them every day as much in amount of muck or loam as the cattle drop, thus making at least five cords a year of good manure from every full grown animal he keeps. Could I induce all the farmers in this State to follow this simple practice right up to the letter, and undertake to cultivate only their best lands, I fully believe in a few years it would make our cultivated fields fertile like a garden and our farmers prosperous and contented.

11. The kind of fruit raised I have already stated. The amount sold would vary from a few hundred to six or eight thousand dollars a year.

12. The same story everywhere; scarcity of good help and high wages. My own practice has been to raise my own help, in doors and out, and try and train them to love home, and all its various duties, in the house and on the homestead. This I know is quite old fashioned, but it has some conveniences after all. Our State and country are suffering extremely from the nonsense taught both at home and in the schools. What we most need is the common, or uncommon, sense, and good training, that will once more fit our sons for the practical duties of life, and our daughters for good housekeepers, wives and mothers.

NORTHWOOD.

[Reported by A. J. Pillsbury.]

1. The farmers of this town are not making money from the income of their farms. There are quite a number of farmers in good circumstances, but receive an income from their money and their wood and timber land.

2. Farming will not pay as the town is located too far from the market, costing too much for transportation. Farmers keep their buildings in good repair, but more from the benefits from manufacturing in the place than from the profits of the farm.

3. Nearly all of the young men abandon the farm and either work in manufacturing shoes or go to some city for employment.

4. The fever not abating.

5. The farms are appraised the full value this year, while other property may in some cases be overlooked.

6. Do not pay much attention to stock. There is less stock in town than formerly.

7. No good stock horses in town. Nearly all the horses were sick with the horse disease last fall. Not more than three or four died.

8. Sheep breeding does not receive much attention. No sheep killed by dogs. Dogs all peaceable.

9. The forests have been very much cut off within the last ten years; but very little of the old timber remains. Lumber is mostly exported; some is used in the manufacturing of shoe boxes and for building purposes.

10. Hay, corn and potatoes are the principal crops.

11. Mostly apples. Fruit growing receives but little attention by the farmers here.

12. There is a limited demand for farm labor and the supply is not equal to the demand, for the reason that the farmer cannot pay sufficient price for labor to induce people to leave manufacturers, where they can make good pay and work less hours.

NOTTINGHAM.

[Reported by one of the Selectmen.]

I do not know of a single man that lives altogether by farming, and I don't think that any one can in this town unless he has a large farm and money at hand to keep it up, and unless he is smart and active his money will grow less in a few years.

The old people as well as the young are leaving the farms every year. Some will try to get other business and bring home for the sake of living on the old place with their aged parents. Others have enough and to spare and choose to stay here because it was the home of their ancestors. Others live until their farms run down and their houses decay so that they cannot live in them, and sell for a trifle to some neighbor who happens to be in better circumstances.

As the farms are less in value every year I think that the appraisal is higher in country towns than in villages.

As for stock there is some very good for this part, but no breeders of improved stock in town.

There is a large portion of the town covered with rocks and growth not large, but lots of growth called bushes. The lumber has been cleared off fast for the past few years; we have but little left.

Potatoes and beans enough to eat in the family, and garden vegetables, with hay enough to keep a small stock of cattle is considered well doing.

But little fruit raised for the market. Considerable shoe-making and lumbering keeps the machinery running at present.

Farm and farm-house labor — enough, such as it is, if we want to pay for it, but there is no farmer that will pay for much.

All the hints that I can give is for every one to live as of old in cheap houses, without carpets on the floors or any luxuries of life, and stay at home; wear home-made clothes and keep at work; save the *cent when you get it*; follow in the footsteps of our forefathers.

RYE.

[Reported by the Town Clerk.]

1. Few men making money solely by farming. Think farmers and gardeners in this section are realizing something from the soil.

2. It is difficult to name a per cent. that farm capital pays; after paying taxes and supporting the family, the profit is small.

3. Young people leave the farm, generally, and endeavor to live in a more agreeable way.

4. The fever is not abating, and we have too little confidence in the power of the soil.

5. As we are all farmers, there is no discrimination.

6. No blood neat stock. No disease.

7. About two hundred and fifty horses in town. Most had the disease; only two died.

8. Few sheep in town — only ninety-five in all; are regarded as profitable. No damage reported by dogs. About fifty dogs taxed.

9. No old timber left; considerable area covered with bushes and small growth.

10. Potatoes, hay and corn, staple products.

11. Apples, and not many of them.

12. Demand for labor, great.

SANDOWN.

[Reported by the Selectmen.]

1. No farmers are making money for the reason that our lands are worn out, or grown over with wood and bushes.

2. To the inquiries under this head we answer *no*.

3. The young people all leave the town, and farms are abandoned in great numbers.

4. They are more than ever inclined to leave this year.

5. We design to appraise all alike; have no city or village property, but the farmer labors under difficulties compared with merchants and manufacturers.

6. No blood stock; less cattle than ten years ago; the value per animal is about the same; no disease.

7. About three-fourths of the horses had the disease — very small loss; no apparent injury to animals.

8. There are a few sheep breeders, having South Downs and mixed flocks. It pays to keep sheep; none suffered from disease, and not many injured by dogs. Dogs taxed, thirty-two.

9. One-half the town is covered with wood growth, but little old growth. It is growing less. It is exported. Mostly white pine.

10. Corn and potatoes. The only income seems to be from the growth of timber.

11. Apples, pears, grapes, and wild fruit.

12. Labor is high; few men hire.

SEABROOK.

[Reported by the Selectmen.]

1. Ten farmers in town, whose occupation is solely farming, carry on mixed husbandry. Five keep up the fertility of farms and five do not.

2. There are but very few in town whose occupation is solely farming. Those having land couple some other occupation with farming. All live as well or better than formerly and work about the same. Buildings are growing better, which shows increased intelligence. Capital invested in farming calculated at two per cent.

3. Ninety-nine per cent. of the sons of farmers leave for other occupations. No farms abandoned.

4. Can see no changes.
5. Farming lands and wood appraised at about seventy per cent.; farm stock, seventy-five per cent. Merchandize of traders appraised at fifty per cent.
6. No pure blood stock in town at present. Less stock than at any former period. Less value per animal. Disease—Pleuro pneumonia in cattle; epizootic in horses.
7. No stock horses in town. Seventy-five per cent. suffered by the disease. One per cent. proved fatal. Ten per cent. depreciated in value.
8. About fifty sheep owned in town; eighty-nine dogs taxed in town; about five dollars per year value of sheep killed by dogs.
9. About one-fourth of the area of the town is forests; ten per cent. less than twenty years of age. Wood and timber are diminishing at fifteen per cent. Lumber is exported. Valuable variety, white pine; formerly black oak and yellow were plenty.
10. Leading crop is hay. Cannot name all sources of income to the farmers in this town.
11. Apples and pears, the standard varieties cultivated. Small fruits of the berry variety of all kinds grow in town. Cannot tell the average value.
12. Demand for farm labor is greater than the supply of both men and women. Cultivate less hoed crops, raise hay on the best land, let the rest go to forests, is the course to pursue.

SOUTH HAMPTON.

[Reported by J. Eastman.]

1. There are but few farmers who make much money solely by farming. Most of our farmers do some other business besides farming to make their money from. Some try to cultivate too much land. Some take but very little interest in their farming, and such cannot expect to make money by farming. Such farmers as cultivate their farms well and increase the value of their farms yearly make some money by farming more than supporting their families. We are situated close by several good markets, so there is no reason why our farmers cannot make more than a good living from their farms; everything they raise more than they want themselves, they can sell at home or in the markets for a good price.

2. The income of our farms does not all pay the farmers for the

outlay, but where they do not they are not well managed. I do not think there is hardly a farm in town, but if it was well managed, it would pay the farmer well and much better than it would twenty-five years ago; he could support his family better, educate his children better, pay his taxes better, and have more money to lay by, and increase the value of his farm every year, etc. We have no agricultural society or farmers' club in town. I think there is no farmer in town that knows what per cent. his farm pays him.

3. Nearly three-fourths of the sons of farmers leave the farm. I think three-fourths of them that leave the farm would be better off if they had not left, and could have felt interested in farming. A few of our farms have been abandoned, and some, partly. More than ten per cent. of our pasture land is growing up to wood and timber, which is valuable to the farmer.

4. The fever of leaving the farm is not much abating.

5. I think farms in this town are appraised higher than other towns adjoining us and city property. Farmers' property can be seen and easily appraised at nearly its true value, while manufacturing property is appraised more upon the evidence of the owners and agents.

6. There is not much pure blood neat stock in town. Neat stock is about thirty-three per cent. less in number than twenty years ago; the value is about twenty per cent. more on each now than then. No disease has affected neat stock within the past year.

7. We have no stock horses in town. Nearly three-fourths of the horses in town suffered from the horse disease last fall and winter. There were but few fatal cases, and not much depreciation in the value.

8. We have no prominent sheep breeders in town, but those who keep them think they pay as well or better than neat stock. The most profit in sheep, here, is the lambs to sell to the butchers early, before they can get them from the country and Canada. They have not suffered much from disease the past year. There were one hundred and thirty sheep in town on the first day of April. If it was not for the fear of the dogs killing the sheep and lambs, there would be many more kept. There were twenty-four dogs taxed this year, a decrease from last year.

9. There may be one-twelfth part of our town covered with forests, and perhaps not more than one-third part of that more

than twenty years old. Large timber is diminishing very fast. Wood is growing as fast as it is cut. Lumber that is cut in town is not manufactured here to much extent, but is exported from town to be manufactured. For varieties of growth we have white, yellow and Norway pine, hemlock, spruce, oak of several kinds, walnut, chestnut, batternut, ash, beech, and birch of several kinds, maple, locust and some other varieties.

10. The leading farm crops in town are hay, oats, barley, corn, potatoes, vegetables, etc.

11. We have apples, pears, quinces, peaches, plums, cherries, grapes, cranberries, currants, gooseberries, strawberries, etc. I have no means of knowing the value of the fruit, but it amounts to more than all other crops the farmers raise to sell.

12. Good reliable help, both of men and women, is scarce and the demand is more than the supply.

SOUTH NEWMARKET.

[Reported by the Selectmen.]

It is impossible for the Board of Selectmen to give any correct answers to the above questions, and must simply say that farming in this town is up-hill business as it is managed by our farmers. Generally no money in it, barely gives them a living. No fancy breed of stock and no scientific farmers in our town.

STRATHAM.

[Reported by the Selectmen.]

1. Not any one. You ask why? One reason among the many is the extra expense of working the farm and extra taxes.

2. We think the farm, including all the outlay, does not pay anything. We think farmers are more intelligent, as the means of information are much greater. Buildings are better. Farmers have more luxuries, work harder, and are less economical.

3. A large proportion, no farms been abandoned. What causes the practice is a desire to live easy and get rich at once.

4. We think the pursuit of farming is more odious to many than ever.

5. Higher we think, and that the valuation on our land and stock is higher than on the manufacturing interests. We endeavor

to appraise all classes as near to equity as our oath requires, according to our judgment.

6. Charles N. Healey, Ayrshire. More cows and less oxen; the milk business is fast increasing and is thought to be profitable. Value of stock is greater; no disease troubled neat stock.

7. William G. Brown, a Fearnought blood, great endurance, speed, docility. Most all suffered, but few died; some have not fully recovered.

8. Have no one in particular. Leicester, South Down and mixed. Have not suffered from disease. Number of dogs, forty. Sheep injured and killed, \$25.

9. Less than one-half. Less than one-half are old, the remainder are from forty years and under. Wood and timber remains about the same, on the decrease if any change. Wood and timber exported mostly.

10. Corn, potatoes, hay, apples, grapes, strawberries; other sources, the whortleberries.

11. Pear, apples, quince, peach, cherry, gooseberry, currant, grapes of many varieties. Average amount of value, small on most of them.

12. The demand is greater than the supply, which is very inadequate.

WINDHAM.

[Reported by Rei Hills.]

1. A few do make money. Mr. J. B. has kept cows and sold milk, and by keeping them tied up in the barn nights, the year round, and putting in loam, has made a great supply of manure, and improved his farm. But the milkman has been so slow in paying, and the price so low, a little over three cents per quart in summer, he has given up selling milk, and works his farm. He has built him a house, has his farm paid for. Mr. J. W. D. makes money. He raises fruit — strawberries, currants, grapes, apples, etc. He has set out his trees, vines, etc. His trees are young, thrifty, and bear well. Some others make money by farming. Some keep a pair of horses, and team wood when not occupied on the farm, and get the most of their money in that way. Mr. M. has lived on his farm over thirty-five years. He gets his money by working at his trade, mason. He has a

fine growth of wood on land that has been cut over since he came here; he has sold his farm.

2. My opinion is, if the farmer has to hire the help to carry on the farm, unless he is situated near a market, so as to raise vegetables, etc., for the market, the per cent. on the cultivated part will be small. But the growth of the wood is helping to increase this, although it is hardly perceptible from one year to another, but in ten, fifteen, or twenty years, the increase is plainly seen. The farmer makes long days. He has a long, slow pull, but it is sure, if he manages well. I think they are more intelligent, and have more money than formerly. They do not work as hard in this neighborhood as they did twenty-five years ago. Many of them do their mowing with horses, and some rake with the horse-rake.

3. There are very few young men willing to stay on the farm. Not many of the farms have been deserted, but many acres that once were cleared fields and pastures, are covered with wood. The causes are, the old men can't cultivate all, and the boys don't want to. The effect on the town is less population than formerly.

4. Some good farms have been sold this spring, and others are ready for sale.

5. Not much difference in the valuation, compared with the traders, mechanics, etc. Appraised about two-thirds or three-fourths of their value, as a rule, but no board of selectmen can get them all exact.

6. Do not know of any pure-blood stock in town. Not as much stock as has been some years. No particular diseases the past year.

7. No stock horses. Nearly all horses had the disease last fall and winter. There were but very few, if any, that died with that disease. Some have had a cough since they had the disease, and some of them are thinner in flesh than before.

8. The flocks of sheep are small. Very few keep more than ten or twelve. No prevailing disease among them.

9. I should think more than one-half of the land was covered with wood. Not many old lots of heavy growth; these have been sawed by steam mills, and been carried out of town. No manufactories of wooden ware in town. Wood and lumber have been diminishing for some years past. The varieties are oak, maple, birch, pine, etc.

10. The greatest source of money has been wood and lumber.

11. Apples are the main stay. Peaches do well on some farms — a few pears. Grapes flourish when taken care of, also the small fruit.

12. Good laborers are scarce, both in doors and out.

STRAFFORD COUNTY.

BARRINGTON.

[Reported by the Town Clerk.]

1. Few if any are making money. Small farmers combine shoemaking or some other trade with farming; larger ones cut wood and lumber.

2. Farmers, as a class, are more intelligent, live in better buildings, have more conveniences than formerly. They do not work as hard, owing, at least partly, to the introduction of labor-saving machinery.

3. Very few if any farms have been abandoned or united with other farms.

4. Very little change.

5. Farms are appraised less than city residences. Valuation of farm property about the same with manufacturing interests, etc.; appraisal about two-thirds cash value. No discrimination in favor or against farmers.

6. Less working cattle than formerly, on account of partial failure of the hay crop previous to last year. Value per animal increased. No diseases.

7. Nathaniel Brock has a stock horse, Draco blood. Nearly all the horses in town were affected by the horse disease; no fatal cases. None depreciated in value.

8. None who make sheep breeding a business. Farmers do not seem to think it pays to keep many sheep. No disease. One hundred and seventeen dogs taxed in town.

9. More than half our forest is old growth. A large amount is cut every year, but this land is such that it grows again very fast; probably it may be diminishing but not very fast. None manufactured in town. Oak and pine, particularly oak.

10. Hay, corn and potatoes.

11. Apples, peaches, pears, plums, currants, gooseberries, raspberries, strawberries, grapes.

12. There is a great scarcity of good help, both male and female. The young men "must learn the shoemaker's trade" and the girls "won't go out doing housework" but prefer going away to factories, etc. This is a serious inconvenience to farmers, both in doors and out. Larger dairies would be kept if the farmers' wives were not already overworked, and much more would be done on farms if good help at reasonable wages could be obtained.

DURHAM.

[Reported by F. DeMeritt.]

1. Quite a proportion are making money. We judge from the prosperity of the farmer, and the improvements made in his buildings, tools, stock and farm. Durham, as you know, is a natural farming town, one of the earliest settled, well located for the marketing of the produce, blessed with a rich, clayey loam, and settled by intelligent, practical men. It has long been noted for its wonderful facilities in the hay and fruit-producing lines. Within the last decade could have been shown you many a man of wealth, accumulated wholly upon the farm. We have scarcely any manufactories among us, and those employing only a few hands. You will find a greater proportion of our inhabitants, farmers, and nearly all in a prosperous condition. I think the chief way of keeping up the farms, is by the exercise of good judgment in the labor expended; planting but little, raising fruit, and keeping as much of the land as possible, well-dressed and seeded down, to grow that paying the best. Occasionally, you may find some one, who does not succeed on the farm, and he can blame no one save his Maker for not endowing him with good judgment, and himself for not exercising what little judgment he has.

2. I hardly think myself competent to give a lucid answer to this question. A per cent. farm capital pays, but at what rate I cannot judge. It seems to vary with different farmers. We often have assessors who either from prejudice or lack of judgment, seem to assess some at a higher rate, according to their real value, than others, and when many of the farmers have to expend labor to the amount of fifty dollars and upward, to work out

their highway tax, or pay that amount, it makes some little difference in the farm returns to what it would, could they have a part of that time or money to devote to farming interests. Yet I think it would be hard to find many farmers who do not live well, and have a little money to invest yearly. As a general thing, the farmers are more intelligent, and live in greater luxuries, and more comfortable buildings, than formerly. The advance and improvements made in farming implements, and the practical and scientific works daily thrown upon them, have made a decided change in their style of living and culture, and you can go into but few houses where you will not be struck by the cozy, homelike appearance, and little luxuries adorning the room. They accomplish more work, truly, than formerly, but the improvements in farming really lessen the amount of labor. In regard to economy, its definition might comprehend too wide a scope. I think the majority of them economical, yet free to supply themselves with an abundant living, plenty of literature, and are liberal in the support of the gospel.

3. Should judge about four-fifths of the young men leave town for mechanical and professional pursuits. Often a man on a small farm may have several sons, and they are early taught to work for themselves, and when they can earn more by mechanical labor than by farming, they naturally get weaned from the farm. Yet there is almost invariably some one to man the farm, or to return to it in the dotage of their parents, and these men of not inferior judgment. In regard to abandonment to wood, I am almost afraid there is not enough of it allowed to remain to insure a lasting fertility of the soil. The old growth is fast disappearing, but few lots remaining, and the young is often cut away to procure pasturing. The per cent. of cultivated ground diminishes, while that of grass increases. I hope, in time, farmers will be led to inquire why our soils are naturally so dry? And when they learn that vegetation is one of the best radiators of heat, and that coolness condenses the moisture from the atmosphere, then they will see the utility of letting poor land grow up to pines and oak.

4. Is the fever abating? The farmers to-day have a higher appreciation of their farms than ever. Human nature, you know, will out, and when drought and rust affect their crops, then down with farming. But when things look prosperous, then the farmer is happy. More soil, during the past few years, has been over-

turned, dressed and seeded down than the average, and with good results. Again, there bids fair of Durham's having a market for its milk in a few years, thus making it a milk region, and any intelligent man can guess what the result will be. Even now they feel that their labors are well requited by their returns from the farm.

5. Durham, being almost wholly a farming town, there is little or no difference in the appraisal of village residences and the farms. Real estate is considered such wherever found, and taxed at about one-half of its real value, as near as can be judged. In some cases, there may be a little prejudice on the part of the appraisers, and some farmers will be rated lower, and others higher, than the one-half value. There have been no manufactories of any importance in town, with the exception of a paper manufactory, and this, I think, has been favored but little. At our last March meeting it was voted to exempt from taxation, for the period of ten years, all new manufactories that might spring up. Bank and corporation stocks are rated at their full value. No discrimination for or against the farmer.

6. No pure blooded neat stock in town. About the average amount of neat stock. As a general thing, better grade stock, and a better class of stock cannot be found than in Durham. Durham blood predominates in stock, thus making a fine grade. The majority of the farmers are good feeders, and often pride themselves on their teams. The value per animal varies with the meat market, there being usually a little extra for fancy. No disease among them.

7. But one stock horse in town, and his pedigree I am not posted on. He is owned by Mr. D. P. Marden, and called "Draco". Blood, good. Nearly all the horses were afflicted with the disease. No fatal cases. Came out well, as far as can be learned; no depreciation in value.

8. But few sheep in town, and no particular breed. Judge they do not think it pays as well as other stock. No disease. In 1872, sixty dogs were taxed, and the value of the sheep killed was \$140.

9. Have no definite idea of the area covered with growth. Should estimate it at one-third. But little old growth as above mentioned. Amount of wood and timber diminishing. Lumber mostly cut in town but not manufactured. Valuable varieties, pine, oak, maple, hemlock, beach, ash, hickory, elm, birch and bass.

10. The leading farm products are hay, barley, oats, apples, potatoes, corn, butter, cheese, and poultry. The most valuable, new practices are the selling milk, keeping more cows and stock, raising more hay and bettering the condition of the farm, generally. The milk business is only *in principio*.

11. Products in fruit are apples, pears, peaches, quinces, plums, cherries, grapes, gooseberries, currants, cranberries, strawberries, raspberries, blackberries, and barberries. Apples predominate, and most always a good supply is afforded, while many of the farmers sell in good years upwards of an hundred barrels.

12. The demand for labor is often in excess of the supply, and it is almost impossible to hire by the month good practical farm hands. There are in this, as in every town, a certain class of worthless characters that will work only so much, and then spend in an unprofitable way what they have earned, doing nothing till that is gone. Foreigners we have a small amount of, and these the brickyards and railroads seem to monopolize. I should hardly know where to go, here in town, to get a woman to do domestic work. They are very scarce, the transient class, especially. Many of the farmers hire their help by the day when there is absolute need, often then hiring their neighbors who own smaller farms. There is here a growing tendency to hire less labor, plant and cultivate less soil; but to plow up the soil, dress it and seed down to grass.

My hints in regard to the requisites for a farmer's success are but few. I should recommend the farmer to study the nature of his soil, either practically or scientifically, and find out what crops and what fertilizers were adapted to such and such soils. I think many a fertilizer and many a crop has been condemned through ignorance of the plant element wanting in the soil. And not unfrequently a fertilizer may be used containing those very elements of plant-food contained in the soil, and not required by the crop planted; hence, a condemnation of both the fertilizer and the crop, when on other soil there would have been good results.

Again, let every farmer save his own manure rather than expend fabulous sums every season for manufactured fertilizers, when he has fine facilities for obtaining an almost equal amount in strength and goodness. With many of the farmers, a large portion of their fertilizing element washes away and is lost in the

waste from the barnyard. Could a sort of cess-pool be dug and filled with some good absorbent, like muck, into which the waste liquid from the barnyard could run, and when this was thoroughly saturated, drained out and filled again, he would, during the year, make or save a large quantity of rich fertilizer. This liquid, thus saved, contains much ammonia, one of the best elements of plant food, which would otherwise be evaporated.

Let the farmer plant nothing but the best, healthiest seed, whether potatoes, corn, or whatever it may be. If you plant small, diseased seed you must expect the same in return. If you plant the strong and healthy seed you will get the strong and healthy in return. Indeed, I think this the only way to increase a good crop of potatoes; so with corn.

Let the farmer also keep a sort of journal giving the date of his planting, the condition of his ground, style of his seed and fertilizer, and the treatment given it during its growth; the harvest of it in actual amount of seed and stalk, and the date of the harvest. By this means he would in a few years know what to do with such and such soil; what crop to put upon it and what result to expect, never failing in any crop planted unless through rust or frost. We cannot govern the seasons but we may in a measure the soil.

FARMINGTON.

[Facts Communicated by the Representatives.]

1. No farmers making money and supporting their families, on account of taxes, high price of labor and cost of living.

2. The per cent. farm capital pays is less than six. Farmers have more comforts and more money than formerly.

3. All leave town who know enough. Not one in twenty of the young men remain on the farm.

4. There is no abating of the fever.

5. There is no equality in taxation.

6. Very little blood stock; less than formerly; no improvement in quality. No disease has prevailed.

7. Nearly all horses suffered last fall from the disease; few died, and none seems now to be injured by it.

8. A few sheep are kept. It pays well.

9. The land is stripped of forests, and as a consequence real estate has depreciated.

10. Hay and oats with a sprinkling of all crops.
11. Apples, pears, and the best of vines.
12. Labor high and not abundant.

LEE.

[Reported by the Selectmen.]

1. Farmers generally say they are not making money from their farms, and give as a reason high taxes and high price of labor, the high price of clothing and groceries for their families.

2. We think the farms of this town pay a very small per cent., taking out the repairs of buildings; but farmers live in better houses, have better farming implements, their children are better educated, and have more conveniences than formerly.

3. A large majority of the sons of farmers leave town for the West and for the manufacturing villages.

4. The fever is not abating. Some farmers are anxious to sell and others have rented their farms and left.

5. We cannot answer properly, for the reason we are not acquainted with city or village property as there is no village and but one small store in our town.

6. There is no pure blood neat stock in town, but there are some mixed blood, mostly with Durhams and Jerseys. The value of animals is greater than formerly. No disease has affected them the present year.

7. There is no stock horse kept in town. Our horses mostly had the disease last fall; no deaths, and they have come out well this spring.

8. There are no large flocks of sheep kept in town. Most all farmers keep a few, mostly of mixed blood. Most farmers think a few sheep pay better than any stock. Dogs taxed, seventy-six. More than enough to pay damage to sheep.

9. A small part of our town is covered with forest; it has diminished fast the last twenty years; it is most all gone, reducing the value of our town very much; it has been carried off by B. & M. Railroad or sold in Dover or Newmarket.

10. Hay, Indian corn, potatoes, barley, oats, peas, beans, etc.

11. But little raised in town; some apples; from two to three thousand barrels some years.

12. Labor was never higher than now. Our young men will do anything but work on the farm and we are getting along with very little improvement in our town.

MADBURY.

[Reported by Albert Varney.]

1. There may be a few farmers making some money by farming; but a great proportion of them do not make any. The most of them make a good living from the farm and meet all their expenses, while there are some, I think, get in debt every year, and others that would get in debt were it not for the interest money which they have to fall back on. The reason why is, the want of good management and because there is not much money to be made by farming.

2. I know of no one who keeps any record of his farming, therefore cannot give exact figures in regard to incomes, but am of the opinion that farm capital does not pay more than two per cent. Farmers, as a general thing, live in better buildings; are more particular to keep them in good repair than formerly. They have more conveniences for cultivating the land, such as improvements in plows, cultivators, etc; and for harvesting the hay crop, the mowing machine and rake which nearly every one has, are considered indispensable, for it would be almost impossible to obtain manual labor enough to get the hay crop in its season without machinery. Am of the opinion that farmers, as a body, have more money at interest, although on taking our inventory we found less than one thousand dollars to be taxed as money at interest. The amount in savings banks has been increasing for the past few years. It now amounts to about seventy thousand dollars, the tax from which amounts to more than enough to defray the town expenses. The taxes are not at all discouraging to the farmers of Madbury when compared with other towns in the State, being this year one dollar and thirty cents on a poll, and a debt against the town of less than five hundred dollars, which I think will all be cancelled this year.

3. I think there is not so large a proportion of the young men that leave the farms as in some other towns, but should think there might be about one-half of them that leave town for trades and commercial pursuits. The number of ratable polls, as compared with 1855, is eight more, being this year one hundred and thirteen.

4. I know of no new instances of young men leaving the farms this spring.

5. This is wholly a farming town, there is no village nor even a store in town; therefore have had no experience in appraising village property, but from what little I know of the valuation of

village property should think farm property was appraised full as high and even higher in proportion to its income than village or city property.

6. There is not much of any pure blood stock in town. If there is any it is of the Durham breed. For a portion of the stock in town is part blood Durham.

7. We have no stock horse in town. The horse disease last fall and winter prevailed to such an extent that hardly one escaped; do not know of but one instance which proved fatal. The condition of the horses is as good as before the disease prevailed. I think there has been no depreciation in value.

8. The number of sheep in town as shown by the inventory this year is two hundred and seven, not quite two-thirds as many as in 1855, being then three hundred and twenty. The general opinion is that with the present prices of wool and lambs sheep pay better than other stock. And I know of no reason why sheep are not more extensively kept, except, it may be, that farmers, knowing the ups and downs to the different branches of farming have an idea that by the time they get their flocks enlarged to a desirable number the business may go down and be no more profitable than other stock. No disease among sheep the past year. The number of dogs taxed this year is thirty-nine. The value of sheep killed by dogs has generally been about equal to one-half the dog tax, although last year there were none killed by dogs.

9. I should think there might be about one-fourth part of the area of the town covered with forests, the principal part of which is pine; some of which is large and heavy. There have been, for the past few years, large quantities of wood and timber cut off. There have been cut during the past winter about one million feet of lumber and from two thousand to twenty-five hundred cords of wood. The most of the lumber is carried out of town to be manufactured, for the reason that there is no mill in town except one, which is a steam mill which has been moved here for the purpose of sawing some five hundred thousand feet of lumber which has been hauled together during the past winter. The amount of wood and timber in town is diminishing although the land is well adapted to the growth of pine which comes up and grows very fast.

10. The leading farm crops are hay, barley, oats, corn and potatoes. It is not considered by farmers a remunerative business

to raise hoed crops for market, for the reason that labor is too high; and as most of the farmers are in the habit of selling hay every year, they have had to reduce their stock, consequently their manure heap is too small in the spring of the year to do an extensive business in that line, as every one knows it is no use to try to raise crops without manure. A large proportion of the land in town is well adapted to the raising of hay, and the most of the farmers realize more money from the sales of hay than all other crops combined. One other important source of income is poultry, particularly turkeys, flocks of which can be found on almost every farm in town.

11. The fruit consists of apples principally, and the smaller fruits are generally found on the best cultivated farms. There are some farms on which are nice orchards of grafted fruit which is generally sorted, put into barrels at the time of harvesting and sent directly to Boston. Large quantities of cider are made from native fruit, a part of which is sent to Boston market.

12. Farm labor is in demand, though farmers do not hire more than they can possibly help, yet the supply is inadequate to the demand. Possibly more so than usual this season on account of the construction of two railroads in this vicinity, the contractors of which employ all the labor they can get, at prices which farmers cannot afford to pay.

MILTON.

[Reported by Joseph Plumer.]

1. Some earn money, not make it.
2. Do not believe the farms of Milton as a whole are paying one per cent. profit. The great majority attend to their business, but not as closely as traders and people in other occupations. They make some improvements; have very little money at interest.
3. Three per cent. of farms are given up to wood and pasture. There are frequent cellars without houses.
4. There seems to be a stop to leaving the farms just now. All young people have gone.
5. It is generally thought farmers pay more than their proportion of the public taxes, and that stock in trade can be kept from the view of the assessors.
6. Neat stock is improving mostly by a mixture of Short Horn blood.

7. Seven-eighths of the horses had the disease last fall. Those not worked and kept out doors escaped. None died. Do not consider horses injured by the disease.

8. Few sheep, and they are profitable. No disease. About one hundred dogs taxed.

9. Wood growing less. Lumber mainly exported.

10. Chief crops grass, barley and oats.

11. Apples.

12. Labor scarce, especially in doors.

NEW DURHAM.

[Reported by the Selectmen.]

1. There are but few farmers in this town who make farming an occupation, and they are not making money in any manner, owing to the high and unequal rate of taxation; they are the old men who commenced farming when the land was new. The number who make farming solely an occupation, under the age of forty-five years, is thirty; the number who make farming and shoe-making an occupation is seventy-five; the number of wood-choppers, twenty-five; mechanics, ten; traders, two; no lawyer or doctor, and but one minister of the gospel (as taken from the enrollment list). The taxes in this town for the year 1873 on a poll, are \$4.94, and have been within the last ten years \$8.73 on a poll. Our town debt is \$30,000. Total valuation, \$296,000. Nearly all the valuable timber, and also the wood that stood within two miles of the railroad, has been cut and carried from the town, some of the timber at ruinous prices, to reduce taxation of the owners who had not the means to operate on the same. Sixty thousand dollars value at first sale has been cut and carried away, which has reduced our total valuation about that amount. The income of farms in this town won't pay the taxes, especially in the sparsely inhabited, worn-out, and partly-abandoned part; and the taxes assessed upon polls and estate of this part of the town are insufficient to pay their annual expenses for schools and highways. This part of the town in its primitive state was covered with a growth of beech, birch and rock maple, principally, and the soil on which such growth stands, is coarse, gravelly and porous, yields well, and easy to crop when new, corn, rye, grass and wheat, but is soon exhausted, and then it is even poor grazing land, being too dry after midsummer, and yielding nothing but

May grass, which all grazing animals refuse when ripe. Men who have families of children locate on farms in order to shun the vices incident to cities and large villages, and other dangers, and not for the pecuniary remuneration for labor; and usually when a young man is smart enough to acquire an education, he immediately leaves the farm and seeks some other occupation more lucrative, and old men are left alone on their farms to do what they can themselves, leaving the rest undone, for the income of the farm will not pay to hire labor and pay the taxes. The farmer, that he may be economical and successful in farming, when his farm has become old and exhausted of its fertility, needs a capital to buy fertilizers and hire labor to recuperate the farm. But in this town, most of the farmers are in debt, and own three or four times the quantity of land that is convenient, and therefore may be called land-poor. This worn-out land will eventually go into the possession of extensive land proprietors, and grow up again to wood and timber. One capitalist has already purchased hundreds of acres of this land that has a fine young growth of pine started.

2. The income of our farms will not reimburse the farmer for the outlay, and the mechanic decidedly has the advantage. Farmers here are agreed that it does not pay to hire labor to raise corn to much extent, and our farms are too old and exhausted for wheat in a considerable part of the town. We think grass pays the best. We have no agricultural society in town, and know of no one who has kept a register of his income. We think that farmers are more economical and industrious than formerly, and our buildings are about the same as heretofore. Those that had money at interest before the war, have increased their pile fast since, and those that were in debt before and at the close of the war, are more in debt now.

3. Nine-tenths of our sons (at least) leave the farm for more lucrative employment. Ten per cent. of our farms have been abandoned to wood and pasturage, and more than twenty per cent. have been partially abandoned, a few fertile acres only, embracing perhaps an intervalle or meadow, being retained as a hay field. Farming is less remunerative in this town than any other occupation that is equally honorable. Hence our sons leave the farm, not to shun manual labor, but to obtain more pay for their services, and consequently the farms are partially abandoned. The old farm-house, once the abode of thrift and prosperity, has gone into dilapidation and decay, and become the

abode of wild beasts and reptiles. Adders crawl upon the door-sill, and woodchucks burrow under the hearthstone. "Foxes look out at the windows and owls hoot there."

4. The fever is not abating. The pulsations are quicker and more violent, and the case is a hopeless one, unless some remedy can be applied more effective than the present prescriptions. The farmers of our town are compelled to labor diligently and live economically to pay their high taxes, and the incidental expenses of their farms. And, almost invariably, they have recourse to their depleted wood and timber lots, to meet their demands at the close of the year. Nine-tenths of our farmers, at least, have no confidence in the power of the soil to compensate them for their labor.

5. We think that farms in this town for the last ten years have invariably been appraised fifty per cent. higher than village residences. We endeavor to appraise the farmers' lands, stock and other property at their true cash value, at a forced sale at auction, while merchandise and manufacturing interests are of such an intangible nature that we must of necessity rely, largely, upon the statements of their owners as to their worth; consequently they are appraised, as we believe, at least fifty per cent. below farming interests. We are not aware of any intentional discrimination either for or against the farmer, but his property is tangible and easily appraised at its true value, while merchandise and manufacturing interests must be appraised upon the *ipse dixit* of the owners.

6. We have no pure bloods. There were in town in 1866, the earliest invoice we have at hand, neat stock, 773; in 1872, 567; decrease in seven years, 206. The par value per head is less than in 1866. No prominent diseases have affected our neat stock within the past year.

7. We have no stock horses. Three-fourths of the horses in town suffered from the horse disease. No fatal cases. There has been no perceptible depreciation in their value.

8. We have no prominent sheep breeders, but those who do keep them think they pay better than other stock. They have not suffered from disease. Ninety-six dogs are taxed in town. From thirty to seventy dollars' worth of sheep are annually killed or maimed by dogs.

9. More than one-half of our town is covered with growth, and perhaps one-fifth part of that is more than twenty years old; but

it has nearly all been culled, the timber and most valuable growth having been taken out. The amount of wood and timber is diminishing. Wood is diminishing six thousand cords per year, and timber one million feet per year. The lumber is exported. There are but a few more valuable timber lots in town. For valuable varieties of growth for wood and timber, we have pine, hemlock, oak, ash, beech, maple and birch.

10. The leading farm crops in town are hay, potatoes, corn, oats, barley and apples. The most valuable new practice adopted is that of staying at home of evenings, instead of spending their time at grog shops.

11. We have apples, pears, quinces, peaches, plums, cherries, grapes, cranberries, gooseberries, currants. We have no means of knowing the average value of the amount.

12. Good reliable help is an article not readily found in the market, and the demand is far in excess of the supply. But of vagabonds and loafers the supply is somewhat in excess of the demand. When we obtain reliable help, either male or female, we prize it as apples of gold set in pictures of silver. In regard to this important requisite, we think the farmer hires too much help, or, in other words, that he attempts to cultivate too great a breadth of soil; that he spreads his fertilizers over too much space. It costs as much to cultivate an acre of poor soil, that will not half pay for cultivation, as it does to cultivate an acre of rich soil, the product of which will quadruple the cost of raising. Our motto is, manure abundantly, plow deep, pulverize thoroughly, plant early, and then proclaim death to every intrusive weed and thistle. And we would suggest that our farms are running down, not because our sons leave them, but on the contrary, that our sons leave them because they are running down. This continual depreciation arises from the fact that we take more than we give. We take from the soil, in farm products, more than we return to the soil in fertilizers. And why? It is because the products of the farm will not pay for its own cultivation, and its taxes, and fertilizers enough to prevent its growing poor. And again, the fibrous roots, which on newly cleared lands serve to loosen up the soil, making it more fertile, have decayed, and the soil has fallen heavy and arid.

ROCHESTER.

[Reported by A. S. Parshley.]

1. There are but few, comparatively, and those are mostly marketers, who make money on the farm.

2. In consulting with several farmers, they estimate six per cent. Farmers, as a body, are more intelligent, and are using facilities to be comfortable and the most respected of any class; but they do not work as hard as a general rule, or near as many hours, as the merchant, neither do they pay so strict attention as the manufacturer, to business.

3. Three-fourths of the sons leave the farm; but few farms are abandoned.

4. The fever is not abating.

5. Farmers, as a rule, I think, pay more tax than any class, from the fact that all they have is in sight for the assessors. There is, in this town, no discrimination in assessing.

6. G. W. Springfield has the best stock, as a whole, of the Durham and Devon breeds; John W. Hall, the nicest lot of cows, of the Ayrshire and Durham breeds. Farmers are improving in stock. No disease.

7. There are several stock horses in town, but none of great value. Three-fourths of the horses had the disease in a greater or less degree, but I see no bad or serious results; only three horses died in town.

8. We have no farmers who are paying great attention to sheep, as our farms are hardly adapted to sheep husbandry. The dog tax this year will amount to about \$350; damages paid last year, \$184.75; sheep killed by dogs will average \$5 per head.

9. But a small part of our town is forests; there is no old growth in town; lots are cut off and converted into money as fast as possible.

10. The crops are varied. The source of income which our farmers may derive profit from is our manufacturing villages, which make a ready market for all produce, at any and all times, at good prices.

11. Apples mostly — a good apple town.

12. Farm hands, this season, are getting twenty-five dollars per month, and hard to find; female help is not so much called for among our farmers.

The only suggestion that I can make, to assist the farmer, is that agricultural literature of a high standard be kept within reasonable reach of the farmer, and agricultural societies be kept up in every town possible, and that our laws to protect them from swindling patent venders and bogus fruit-tree agents, who are not responsible, be made as reliable as possible.

ROLLINSFORD.

[Reported by the Farmers' Club.]

1. There are forty-nine farmers in the town of Rollinsford; at least thirty-three of these are making money by farming, at the same time keeping up the value of the farm, and supporting their families. There are five other farmers who are making money and are adding to the value of their farms, but they buy and sell milk in addition to their farming. Several of the other eleven are probably gaining property; none are growing poor by farming. Twenty-four of these make and sell milk; twenty-one raise and sell hay; twenty-two raise and sell fruit; three raise and sell stock; twenty-five raise and sell truck; thirteen make and sell butter. Most of these raise corn, grain, potatoes, the common garden vegetables, and poultry, and make pork, beef, butter, eggs, etc.

2. So few farmers keep accurate accounts of the income of their farms that it is very difficult to give reliable estimates of the per cent. which farms pay. All are ready to admit that the farmers of this town have improved their property to no small extent within the last twenty years. When we take into consideration the ability to educate their families, the comforts, conveniences and luxuries at their command; the leisure hours they may and do enjoy; the money accumulated during this time, with the increased value of their farms, we have no doubt that the farms of this town have paid a net yearly income of six per cent. during this time.

3. The proportion of farmers' sons of this town who have left the farm for other professions for forty years last past is about forty-seven to forty-two who have chosen farming as a living. For the last fifteen years the ratio is twenty-one who have left to ten remaining on the farm. No farms have been abandoned to wood or pasturage; few boundary lines have been changed. There is but one farm now offered for sale, and that in consequence of the death of the owner.

4. Farmers are less inclined to sell and are more contented than at any time within the last five years.

5. Farms, the real estate of manufacturing companies, and village residences are taxed about alike. Merchandise and personal property of manufacturing companies are taxed lighter, while but a small part of money on hand, at interest, invested in stocks or other securities is taxed at all. Merchandise and the personal property of manufacturing companies are taxed about one-half their value. The real estate of these companies, village residences and farms are taxed at least sixty to seventy-five per cent. of their value.

3. Samuel H. Rollins, Moses Roberts, and W. B. Garvin keep full blood Short Horn stock. There is less stock in number kept than formerly, but the animals are larger, better cared for and more productive than in years past. No diseases, except those of common occurrence, have prevailed.

7. No stock horses owned in town. Nineteen-twentieths of the horses suffered from horse disease, last fall. One case in fifty proved fatal. Horses have not decreased much in value on account of the disease.

8. Capt. George Wentworth has a splendid flock of the South Down crossed with the Cotswold, and David O. Cate a flock of the Leicester crossed with the Merino. But very little attention has been given to sheep raising in this town for twenty years. Seventy-two dogs were taxed last year, and no loss of sheep by them.

9. One twentieth part of the area of this town we estimate to be covered with growth. One fiftieth part is over one hundred years old, two-fifths over fifty and one fourth under twenty years. The wood and timber are not diminishing. The lumber cut in town, except when lots change hands and are stripped, is usually used in the erection and repairs of buildings and fences, and making boxes for goods manufactured in town. White and pitch pine, white, red and yellow oak, white and red maple, walnut, white ash, yellow, white and gray birch, elm, hemlock, willow.

10. Hay, milk, potatoes, fruit, corn, truck, beef, pork, grain, butter, poultry, eggs, mutton, wool, veal, wood and timber, honey.

11. Apples, pears, grapes, cherries, plums, raspberries, blackberries, strawberries, gooseberries, quinces, walnuts, lemon walnuts, currants.

12. Great demand both for farm and house help. Inadequate supply; remedy, foreign help. Liberal wages are offered.

NEW PRACTICES OF TEN YEARS' STANDING OR LESS.

Selling farm produce for cash to village merchants instead of changing it for goods as formerly, renovating pastures, raising truck for market, tile draining, furnishing water by the hydraulic ram, feeding more grain to stock, stabling cows by night in summer, cutting hay earlier; fence consisting of stone of any shape (the only requirement being of sufficient weight to prevent being blown over by the wind,) placed at the same distance apart as fence posts, drill an inch hole in them four inches deep, place in this an iron rod (old gas pipe will do well enough), thirteen inches long, confine it with brimstone, take a post of sufficient height for the fence when placed on the stone, bore a hole in the end of it ten inches deep, and drive it closely on the rod, and you have a post all ready to nail the boards to. This fence can be easily repaired, is not liable to be disturbed by the frost, and has every appearance of durability.

FROM TEN TO THIRTY YEARS' PRACTICE.

Plowing, dressing and reseeded grass land without planting it, encouraging the growth of wood on low priced land, keeping orchard land under cultivation, a constant supply of dry wood on hand, doing farm work with horses instead of oxen, the use of phosphates, and other commercial fertilizers.

STRAFFORD.

A verbal report was made to the Secretary by the Representatives of Strafford, by which it appears that farming is not generally practiced aside from other occupations; that of itself it does not pay, and there is the same story of young men leaving the farm and engaging in other work.

In regard to stock there are no blood animals. No diseases among any class of animals: horses had the epizootic; none of value died. Sheep are not generally kept.

The forests are decreasing; the lumber sent away. Strafford is a fair fruit town. Labor scarce.

BELKNAP COUNTY.

ALTON.

[Reported by the Selectmen.]

1. About one in twenty of farmers make money by their dairies and stock and produce. The twenty barely live, farms running down, labor high.

2. Farm capital pays no per cent. in our town. The farmer's gain is from his own labor. Farmers are more intelligent, live in better houses and have more luxuries than formerly. They have more money at interest; cause — they invest less in real estate.

3. Three-fourths of farmers' sons leave farming and one-tenth of farms abandoned to wood and pasturage. Cause and excuse, "can't get their living by farming;" the result is depopulation, more pasturage and less farm products.

4. Farmers that are farmers have confidence in the powers of the soil of our State and will work with a will to compete with the great West.

5. We appraise farms as to value the same as village or manufacturing property. We appraise all taxable property four-fifths of its estimated cash value. The farmer stands an equal chance in taxation.

6. There are more neat stock in town than last year but not near as much as two or three years ago before the dry seasons. Neat stock is ten per cent. higher than last year. Neat stock has had no disease the past year.

7. Daniel E. Garland owns a stallion, Abdallah blood. Maj. G. D. Savage owns the Alton Boy, Ethan Allen. John Hodgdon has a stallion Draco or Morgan. Jonathan L. Blakeley owns a stallion Morgan breed. Three-fourths of the horses suffered from disease. No fatal case in town. Those that had the disease, at the present, are in good condition and have not depreciated in value.

8. Sheep breeders in town — C. C. Mooney, the Leicester breed; Simon Straw, same breed; John S. and Dana B. Morse, mixed breed; Ezekiel Hayes, South Downs. They think it pays better than other stock. Sheep have not suffered from disease. Dogs taxed in town one hundred and seventy, and the sum paid for damage by dogs in 1872 was thirty-four dollars.

9. One-third is covered with forest and all new growth, except

three or four lots. Wood and timber are diminishing. Part of lumber manufactured and part exported. Manufactured into buildings, shoe boxes and spools. White and hard pine and hemlock for timber, and oak, maple and beech for wood.

10. Hay, corn, grain and potatoes.

11. Apples, fair size produced. No. 1 apples sold last fall for \$1.75 a barrel.

12. Labor is equal to the demand. Smart young men get more than the farmer can pay and so he is obliged to hire the second or third best.

BELMONT.

[Reported by E. A. Rowe.]

1. But few, by hard labor and rigid economy.

2. The farmer labors under the disadvantages of high price of labor and heavy taxation. Most of them are more intelligent, live in better buildings, have better conveniences than formerly; have no more money at interest; work harder and are more economical.

3. Seventy-five per cent. of farmers' sons are seeking other pursuits. Not farms enough have been abandoned to injure the prosperity of the town.

4. The fever is not abating and they are as ever inclined to seek other pursuits.

5. Farms, village residences and manufacturing property are on the same basis of appraisal. The valuation of farmers' lands and stock compares to the manufacturing and commercial property as seventeen to one. No discrimination for or against.

6. No one owns pure blooded stock. More neat stock than last year, but not more than formerly. The value of stock is less. No disease has prevailed.

7. No stock horses. Nearly all had the horse distemper; but one fatal case in town; condition of the horses as usual; are not depreciated in value.

8. No leading sheep breeders. One hundred and four dogs taxed. Twenty-five to thirty dollars paid annually for damage done sheep by dogs.

9. One acre in twenty, wood and timber; nearly all second growth; is diminishing yearly; lumber manufactured and exported.

10. Hay the leading product of the farms. The practice of top dressing has commenced.

11. Apples, pears, plums, peaches, all leading fruits; value not known.

12. The demand for labor far exceeds the supply, male and female.

CENTRE HARBOR.

[Reported by the Town Clerk.]

We have no very wealthy farmers in town, but some that make money to a moderate degree, solely by their occupation. The most prominent are Jonathan P. Norris, James M. Paine, Charles Canney, Alonzo W. Canney, Daniel Davis, A. C. True, Moses G. Webster, Daniel W. Coe, Hiram McCrillis, and others I might name. Farmers make money by raising neat stock, horses, sheep, etc., more than from other sources. I was told, not long since, by a prominent merchant at Meredith village, that he liked to trade with farmers because they had means to pay, and were generally prompt. It is true that some, by being shiftless, lay up but little, but on an average, farmers in Centre Harbor are free from debt, and are annually storing up a little for their future wants and comfort.

2. I cannot reckon higher than twelve per cent. This, perhaps, is as near as can be ascertained. Considering the superior advantages at the present day, it cannot be otherwise than that farmers are more intelligent than formerly, and they certainly do live in better buildings, though but few are splendid, still they are not log huts, as in early times. They have more conveniences and more money at interest than formerly.

3. As near as I can ascertain, about one-half of the sons of farmers leave the farm for other occupations. No farms in town have been wholly abandoned to wood and pasturage. Two or three have been sold, and as many tenanted.

4. There are but few inclined to leave their pursuits, and none, with the exception of one or two in feeble health. Their confidence in the power of the soil is not lost.

5. The selectmen do not appraise farms or farmer's stock, any less, in proportion to their value, than other property, but all the same, and as near their cash value, as their judgment will direct. It is true that farmers might not be disposed to sell their farms

and stock at the appraised value, but if exposed to a public sale, it is uncertain whether they would command a greater amount of money, so that there has been no discrimination in favor or against the farmer on the part of appraisers for taxation. There has, for many years, been a common rumor that the Selectmen appraised all taxable estate at two-thirds its real value, allowing the other third for the expense and risk of sale. But such is a rumor only.

6. No pure blood neat stock is owned in the town to my knowledge, but much more foreign blood than formerly. The Devonshire takes the lead in Centre Harbor, but not the full blood. The value per animal is much greater than in former times. I have known good six feet cattle to be bought for forty dollars; now they sell as high as one hundred dollars. It is safe to say that neat stock is of more than twice the value it was at former times. No disease has prevailed among neat stock the past year.

7. No stock horses of value are owned in town; we have, however, some good horses, and one pair, said to be worth one thousand dollars, were recently taken to Boston for sale. Nearly all the horses in the town suffered from the disease that prevailed last fall, but none I think were lost; all are right now.

8. I count from the records one hundred and sixty-three sheep owned by farmers in the town. The principal owners are Charles Canney, William P. Sturtevant, Jonathan P. Norris, Samuel G. Bartlett, Otis F. Hawkins and James Jackson. The breed is almost wholly natives and grades. No fine wool sheep are kept, the profits arising chiefly from raising lambs for the market. Charles Canney has this spring twenty-four lambs from thirty-one sheep. I wintered thirteen sheep and all have lambs but two, and one of the two lost her lamb by being frightened by a dog that entered the fold. From eleven of the thirteen sheep I have twenty nice, smart lambs. I will not boast but barely say "beat that who may." Last year I sold my lambs for five dollars per head and shall expect that or more this year. They go to market the first of July if early lambs, if not, later in the season. When we can have "good luck" with our sheep it pays much better than to keep other stock. Sheep have not suffered from disease, but some have been killed by dogs, perhaps eight or ten during the past year. The value of sheep killed by dogs is not

far from twenty-five dollars. I count from the record forty-six dogs that have been taxed this year.

9. As near as I can judge one third of the area of the town is covered with forests. The old growth is about all cut away and what remains is new. The increasing demand for wood and lumber for several years past has had a tendency to almost bewitch landholders and they have blindly been cutting down their forest trees at an extravagant rate. It does not appear now that the amount of wood and timber is at all increasing, but fear the other way. The greater part of the lumber cut in town is taken to Meredith Village and there manufactured into building timber, boards and boxes. The varieties are white pine, white oak, red oak, white birch, white and rock maple and a small proportion of hemlock and spruce. No special varieties not common to other sections.

10. The leading farm crops in town are wheat, oats, corn, potatoes, carrots, beets, hay and garden productions. By far the greater income to the farmer arises from raising stock. Corn and grain of all kinds are generally consumed on the farm, fed out to horses, cattle, sheep, swine, etc. We have had lighter crops of hay for a few years past than formerly, which has induced farmers to feed out more grain to their stock. The very first of last March I began to feed to my sheep oats, beans and corn of about equal parts, well mixed together, so that when the lambs came they were strong and "grew like weeds," having had a full supply of food.

11. Apples, pears, plums and grapes are the principal productions of fruit, apples being the leading article. I would set the average value of the amount at one thousand dollars. This, perhaps, would be an under estimate for last year, there being a full supply.

12. We pay for good male laborers one dollar per day and board; for haying or reaping two dollars. First rate female laborers demand fifty cents per day; some more and some less. The hints we would give in regard to this matter are, first, that parents train their children to work, and second that they stay at home.

(Second Report, by the Selectmen.)

1. We think one-half of our farmers are keeping up the valuation of their farms and supporting their families by farming, and perhaps one-fifth of them are making some money.

2. We think the farmers do labor under some disadvantage, taking the price of labor, wear and tear of tools, taxes, repair of buildings into account, compared with the mechanic and merchant. They live in better houses than formerly. Not much money to let in our town. They do not work any harder and are not so economical as formerly.

3. Perhaps three-fourths of the sons of farmers leave their homes for other pursuits. We do not know of any farms that have been entirely abandoned.

4. The farmers are not any more inclined to leave their farms, but still have some confidence in the power of the soil.

5. We have no manufacturing in our town and cannot tell how the assessments on farms compare with merchandise and manufacturing interests.

6. There is some good neat stock owned in our town, but none pure. The value of stock has perhaps nearly doubled within the last twenty years. No disease has affected the stock the last years.

7. No stock horses owned in our town. The disease was general, but don't know of any fatal cases.

8. We think it pays to raise sheep, but there is only a few raised in town. Our town is very well adapted to them for grazing. Sheep do not suffer by disease, but farmers are somewhat discouraged from raising them because of the dogs. There were forty dogs taxed in our town. Twenty to thirty sheep were killed or maimed by dogs last year.

9. One-fourth of the area of town is covered with forests. But only a very little old growth, nearly all second growth. Lumber cut in town is exported and manufactured into building materials. The varieties of trees for wood are oak, maple, beech, birch; for lumber, pine, hemlock, oak. No special varieties.

10. The leading farm crops are corn, wheat, oats, grass, potatoes, beans. The sources of income are farm stock, hay, butter, poultry, lambs.

11. Very little fruit raised in town, except apples, and only an average quantity of those. But our farmers are making some improvement in this line.

12. There is some demand for farm labor, and there is a limited supply. Not much demand for farm-house labor.

We think that farmers should be more interested in their pursuits and try to make the farm more attractive for both boys and girls that they may be induced to stay at home.

GILMANTON.

[Reported by the Selectmen.]

1. We have a few farmers who say they are making something by farming and keep up the value of their farms and pay their expenses, but the most of them say they have as much as they can do to live and pay their outsets, labor is so scarce and high.

2. This question seems to be answered in part, in the first. We are unable to state any profits the farms pay. We are of the opinion but very few pay any over and above the expenditures. In regard to the intelligence of farmers it is a matter of judgment. We have farmers in town of good intelligence and well informed; the means of information have very much increased within the last thirty years. Our towns-people have better buildings, and more money at interest than in former years.

3. A large proportion of our farmers' sons leave town for trades and various occupations, because they say they can do better. We know of no farm which has been wholly abandoned to wood and pasturing within ten years.

4. We do not know as farmers, as a general thing, are leaving their business any more this year than a few years past.

5. We have intended to appraise farm property the same as village property according to its value, the situation to be considered, and comply with the law.

6. We know of no pure blooded neat stock in town (our neat stock is what is called cross); the amount is less than three or four years ago, and the value greater than six or eight. No particular disease has affected neat stock the past year.

7. We have but a few good stock horses in town; are unable to give any particular account of their blood. The most of our horses suffered from the horse disease last fall and winter, which did not prove fatal with many; most, if not all, recovered with not much depreciation in value.

8. Sheep are not very extensively bred in this town, some very good flocks, some farmers keep five or six, and others any where

from six to fifty or more, and think they pay better than neat stock; breed cross, principally, Cotswold, Southdown and native. Have not suffered much by disease. The number of dogs last year, one hundred and ten. The damage by dogs the past two years has been about equal to the tax in this town.

9. About one-fourth of our town is covered with wood and timber, mostly second growth; the timber is diminishing, and is manufactured into boards, plank, joist, shingles, clapboards, etc., but very little exported; the hard wood without doubt grows as fast as it is consumed.

10. The principal farm crops are hay, wheat, corn and potatoes.

11. The most of the fruit in town is apples, some garden fruit.

12. The demand for labor is not as great as formerly. Farmers generally have found it unprofitable to hire only what they think is very necessary.

SANBORNTON.

[Reported by the Selectmen.]

1. But few farmers make money — those on fine farms. The reason, labor high, farms producing less with the same labor.

2. Farms are not paying over two per cent. Farmers are more intelligent, live in better houses, have more luxuries, educate their children better. Have more money at interest.

3. Sixty per cent. leave farms for other business because they like other business or a more favorable locality for enterprise. Four per cent. of farms turned out or united with other farms. Cultivated part of our town decreasing.

4. Fever about the same as last twenty years.

5. Farms and farm stock are appraised nearer their true cash value than any other kind of property.

6. Most of neat stock is a mixture of Devon and Durham, few Jerseys. Less stock than four years ago. They compare well of their ages with former years, some better. No disease. Thomas W. Taylor has pure Hereford bull, three years old; Bernard H. Burley, bull, pure Devon; James E. Knox, Durham bull.

7. Stock horses are owned by John S. Wallis, blood Morrill; Hiram B. Philbrook, Young Major, blood Allfours and Merrill; Simeon C. Drake, blood Morrill and Allfours.

8. James E. Knox, James W. Eaton, P. C. Shaw, Taylor C. Prescott, Joshua March, Herman T. Hale, John B. Wadleigh.

There is a mixture of Cotswold, South Down, Merino, with old native, very good, shear from four to five pounds and bring good lambs for market. Sheep pay better than other stock if they have good range in summer. Have not suffered from disease. One hundred and fifty dogs taxed in town. Value of sheep destroyed, \$100.

9. Ten per cent. covered with forest, one third new growth. Not diminishing in area but in value. Lumber exported. But little old growth pine, quite an amount of sapling pine with hemlock and oak. Wood, beech, birch and maple.

10. Leading crops, grass, corn, potatoes, oats, barley and wheat. Using more fertilizers and trying to save their manures. The farmers have an income from interest money, growth on wood, orchards, vines, but above all, healthy and happy children.

11. Apples, pears, plums, grapes, currants, strawberries, and gooseberries. But few sold except apples.

12. Farm labor very scarce. Farm-house labor almost impossible to get at any price.

TILTON.

[Reported by Jacob B. Sanborn.]

1. But very few farmers, if any, are making money solely by farming, that few by denying themselves all luxuries, and practicing the most rigid economy. The reasons in part are: First, the farms of our town are mostly small, simply a comfortable home and living; second, the value of labor, fertilizers, etc., is considerable higher in proportion than the products of the farm are, after being raised; third, high taxes; this year, \$2.75 on a poll.

2. The opinions upon this point are various and conflicting, but after careful summing up of the whole matter, we are forced to the conclusion, that, allowing full value for all the products of the soil, growth of stock and wood, and all the permanent improvements, the farmer receives no per cent. or interest on the capital invested in the farm, labor value, fertilizers, seeds, grains, taxes, wear and tear of implements, repair of buildings, etc. This picture may look dark; nevertheless, the more we look into the matter, the more we are satisfied of the truthfulness of the position. In this estimate, we take the farm within its own means, without selling off hay or wood, and calling it the income

of the farm; for what is taken off more than the annual growth reduces the value of the farm. Farms situated near a village, of course increase in value with the growth of the village, which, as we understand, is not to be taken into consideration under this question. The statement is frequently heard among the farmers, that they barely make the ends of the year meet. In making the statement that farming does not pay, to the largest farmer in our town (Joseph P. Dearborn), his reply was: "Why say my farm don't pay? I make money at farming;" but added, "the lumber business is very handy to pay bills with" (he being a large lumber dealer). Well he might, keeping several yokes of heavy oxen on his farm for lumbering, to which he feeds an average, daily, of six bushels of western corn, thus adding a mine of wealth to his farm yearly, and calling it making money at farming. This is making outside business make the farm pay instead of the farm itself. There is no doubt but that farmers, as a body, are more intelligent, have better buildings, more conveniences and luxuries, improved farming tools, the ladies their sewing and washing machines, etc., and some farmers have money at interest. But most every case of improvements in building, conveniences, money at interest, etc., has been effected at the expense of the farm, by selling off wood, timber or hay, thus reducing the real value of the farm, or by money earned away from and outside of the farm by odd jobs, after planting, after haying, etc.

3. From seven-eighths to nine-tenths of the farmers' sons leave the farm for other pursuits. The Yankee boy is too fast a youth to submit to parental and home restraints any longer than he is compelled to remain under the parental roof. The farm is too slow a process for earning spending money, and just so long as trades and professions offer better inducements than farming, in ready money and more of it, just so long will the sons leave the farm for something else. But few farms have been abandoned since the organization of our town in 1869, to wood and pasture. What few have been so abandoned ought not to have been put to any other use; is not enough change to effect the valuation of the town.

4. There has been a sort of a strong fever for years for leaving the farm for other pursuits or for the richer lands in the far West. The fever is about on an average, no abatement perceptible. The faith in our rocky, worn-out soil is not so very strong or saving in

its power, nor can be, until science or practical experience can furnish something cheaper and more abundant to restore the soil to its virgin richness and productiveness.

5. As to the fifth question, we consider ourselves honest, especially under oath, until the proof is produced to the contrary, yet in all true honesty, we have no doubt but that farmers are rated higher in proportion to the dollars and cents invested and used, than manufacturing corporations and other village property, from the fact that the full value of such property cannot be so well ascertained and appraised. We intend to appraise property at about two-thirds of its cash value, or its full value, as would be appraised for sale at auction or in an emergency.

6. No full blood neat stock in town, mostly grades. Less number than formerly but better kept; the price of cattle being higher than formerly, there may be the same value as in former years. No special disease.

7. No stock horses in town, and but very few valuable horses of any kind; there seems to be but little interest felt in blooded stock. Probably seven-eighths of the horses had the disease last fall; some four had it this spring; none fatal; most of the horses have recovered from the disease; some have a cough now, and show the effects of the disease about them, but the majority of them have recovered their full health and value.

8. But few sheep are kept in town. Mr. Josiah H. Philbrook has a flock of about one hundred Merinos; eight other farmers have from twenty to forty apiece; common breed. The opinion of sheep men, is that sheep pay better than any other farm stock at this time. No special disease. We have seventy-five dollars dog tax this year. No sheep killed in 1870, 1871; in 1872 four sheep killed, value sixteen dollars; this year, 1873, two sheep, three lambs and one calf, some twenty-five dollars. We would recommend and urge a heavier tax on dogs.

9. Less than one-fourth of the average of our town is wood. No old growth; what is termed second growth. Some are of the opinion that wood and timber grow as fast as cut, but the majority are of the opinion that, under the present ratio of cutting, it is gradually diminishing. The soft timber, pine and hemlock, is mostly used at home for building and repairing buildings; the hard wood timber, white and red oak, is mostly shipped for car building, etc. Valuable timber, pine, hemlock and oak. No special varieties.

10. Our farming is wholly what is termed mixed farming. The main crops are corn, oats, potatoes and hay; hay is the most important. But little rye, barley, or buckwhert sown. Wheat is sown more of late and will, perhaps, average nine or ten bushels yield to the acre.

11. Apples are the main fruit crop. No other fruit grown of any amount except for family table use. The apple crop may be valued perhaps two thousand dollars.

12. But few farmers in our town hire by the month, most of them calculate to carry on their farms within their own means, what they do hire they hire by the day, at from one dollar to one dollar and a half a day, so that the demand for labor is not great, yet the supply is not equal to the demand, for those that work out will do most anything but farming. Considerable help is called for in haying time at from two to three dollars a day. As for women help it is out of the question, at most any price. Nineteen-twentieths of the girls leave the farm and their homes, for the factories, trades, or teaching, anything but housework. Not one young lady in a dozen at the age of sixteen or eighteen can get a good meal of victuals alone. In case of sickness many men have to not only cook what they can but nurse the sick. We can see no remedy for this deplorable state of help but to introduce foreign help; Yankee girls will not work out at house work, or as nurses, if they can get anything else to do. We would recommend premiums being offered at our fairs for anything in the cooking line, and butter and cheese, to girls of fifteen or sixteen years of age. We think it far more important than premiums offered for toilet trinkets, which they may be especially taught to do, of no special value.

REMARKS.

The great desideratum in New Hampshire farming is where-with to dress the soil. In the transformation of the products of the soil back to the soil again in the shape of manures, there must be a loss and waste. How is this loss to be made up? A resort has been had to commercial fertilizers to supply the waste, but the general decision is that at the present exorbitant price and cheat, it don't pay, otherwise than a little in the hill to start the early crop with.

The Board of Agriculture have well pointed out and urged the saving of the liquid manure, sink slops, etc., as a great help. The

farmers will do well to heed their advice, yet there is a waste, and it must be met and supplied. Our intervale farms may pay where nature keeps the soil rich by overflowing waters; also the farms near the villages can be kept up by supplying the waste from the village stables and sinks, but how are the farms back and away from all these resources to be kept up? When you can point out the available and practical means to make good this waste, you will have done an invaluable service for our New Hampshire farmers. We have at the present time outside aids, in flour and grain brought from other States, consumed and used on our farms to enrich them.

There is sold and purchased within the limits of our town some sixteen to seventeen thousand bushels of corn and some three thousand barrels of flour yearly. (I have this statement from our merchants and millers estimated in gross.) A part of this amount it is true goes into the adjoining towns of Northfield, Belmont and Sanbornton. At this ratio there must be at least ten or twelve million bushels of corn and from two to three million barrels of flour imported into our State yearly. It does seem that with the consumption of this amount of grain, the avails of which are carried on to our fields, with the immense amount of commercial manures used, that our fields and pastures ought to be growing richer and richer; instead of running out and being abandoned, yet it is the fact that many farms are yearly being abandoned.

I can see no other way but to resort to green crop dressing, and whether that will be of any practical value on our soil is yet to be proved. It is said that the soil of the great German States is richer to-day, though having been cultivated more than three hundred years, by green crop dressing. If the German soil has been thus kept up why cannot our own soil? It would of course involve the loss of one year's use of the land, now and then, very true, which many farmers would hardly think they could afford, but some means or practice has yet to be resorted to or much of our New Hampshire soil will be left to grow up to wood and timber again. The farmers ask for information and practical experience if any has been had on this green crop dressing.

CARROLL COUNTY.

ALBANY.

[Reported by H. C. Burbank.]

1. No farmers are making money aside from supporting their families.

2. The per cent. which farm capital pays cannot be estimated. It really pays no dividends, the farmer merely getting pay for his labor. Buildings not much improved, but better furnished. They have no money at interest.

3. Boys generally leave the farm. Several farms not now cultivated.

4. The fever has stopped, for lack of material.

5. All are treated alike in taxation.

6. The neat stock is mixed and is scarce, having been sold off in consequence of a failure of hay. The only disease is that which pertains to the locality, known as the "gaunt ail," and this is not as serious as formerly.

7. All horses had disease and none died. They were generally unfit for work for a long time, but don't seem to have depreciated.

8. No sheep in town to mention.

9. Three-fourths of area in wood. The extension of the Conway Road and the building of the Ogdensburg and Portland Road help the town and tend to a market for wood.

10. The products are hay, oats, potatoes and some corn.

11. There are some apples and much wild fruit.

12. Labor is scarce and high.

BARTLETT.

[Reported by G. W. M. Pitman.]

The town of Bartlett is made up of Locations and Grants, and what we call State lands. It was incorporated in the year 1790 and the State lands have been annexed subsequently. The Locations and Grants were made under George the Third, and covered the lands susceptible of cultivation in the valleys of the Saco and Ellis Rivers and their tributaries, the East and Rocky branches.

The State lands cover that part of the town which is mountainous, and of which very little is in a state of cultivation, mostly

in a state of nature, or what we call original growth (absurd in fact, yet in respect to us perhaps true). And I should say that fully two thirds of the town may be found of this character, one-half original growth, the other one-sixth second growth, and the third, cultivated land.

Our soft timber consists, principally, of hemlock and spruce, but little pine except second growth, the original pine timber being principally cut off. Our hard wood timber is maple, beech, birch and elm, with quite a sprinkling of poplar. Our second growth is principally maple, birch and poplar. We have also cherry-tree and lever wood but not in great abundance.

We have one of the best iron mines in the world, we think, both as to quantity and quality, and ere long will be operated and fully demonstrated as such.

Considerable lumber business has been done in Bartlett in years past but not for manufacture in town. Our lumber has been exported, but with the introduction of railroads a change undoubtedly will take place as to the exportation of lumber, for already a steam mill is in process of erection for the manufacture of lumber, and others are contemplated.

The agricultural products of Bartlett may not favorably compare with many towns in the State, for the most of our people do not depend wholly upon that branch, but other branches of industry in connection, for a livelihood, yet I see no good reason why farming in Bartlett may not be made profitable. It is true, burdens fall more heavily upon farming interests than upon many other branches of industry for reasons that might be suggested, yet, notwithstanding, when I see a farm well managed thrift is the result and prosperity is clearly exhibited.

The agricultural products of Bartlett the past year, as nearly as I can estimate, are fifteen hundred tons of hay, five thousand bushels of corn, eighteen thousand bushels of potatoes, five thousand bushels of oats, one hundred bushels of wheat, two hundred bushels of rye, two hundred bushels of beans, seventeen thousand bushels of apples, and nine thousand five hundred pounds of maple sugar.

The dry seasons two and three years ago greatly affected our farming interest, but last year farms somewhat recuperated, and with present indications I am hopeful of more favorable results.

BROOKFIELD.

[Reported by J. B. Burrill.]

When we took the invoice last spring I inquired about farming interests. Some would say they were trying to make improvements. I don't know but one man in town who is making improvements, that is Edwin C. Newell. Our land is growing old, it does not bring forth as it did years ago. People are cutting off both wood and timber very fast, they seem almost crazy to get it into money.

EATON.

[Reported by T. B. Thompson.]

The same old story in regard to 1 and 2. Few have money, all live better than formerly and do not work as hard.

3 and 4. Young people all leave the farm, and one farm in thirty has been abandoned. There is but little confidence in farming.

5. Taxation affects all parts of the town alike. There is no discrimination.

6. Neat stock is diminishing.

7. Half the horses had the distemper. None died. They do not now seem to be affected.

8. Sheep are scarce, yet they pay well. No disease among them. About thirty dogs taxed.

9. One-third of the town is in wood, but little of which is cut and manufactured in town.

10. The products are hay, oats and potatoes.

11. There is some good orcharding.

12. Help of all kinds is scarce and hard to obtain.

EFFINGHAM.

[Reported by John A. Leavitt.]

1. There are no farmers making money.

2. It does not pay any percentage.

3. I should think three-fourths of the sons left the farm. I should think one farm in twenty had been turned out. The cause is farming does not pay.

4. No material change from the last few years.

5. On the same equality as near as we can get them.
6. There is no neat stock but natives.
7. Some five or six fatal cases of horse disease.
8. There are seventy-five dogs taxed. The value of sheep killed is from fifteen to thirty dollars a year.
9. One-fourth part is in wood. A great proportion is small growth.
10. The leading crops are hay and corn.
11. The apple crop.
12. There is no great demand, all farmers do all they can within themselves.

FREEDOM.

[Reported by the Town Clerk.]

1. I am sorry to say so, but I don't think we have one man in town living solely from the farm; there seems to be a lack of energy and enterprise.
2. My best judgment is that farming pays less than one per cent.
3. One-half of the sons of farmers leave for other business. One-fiftieth of the farms are abandoned to pasturage. The land is broken and uneven, although good.
4. They maintain about the same zeal as ever.
5. It is all calculated to be at cash value without discrimination.
6. I cannot say as there is one man in town that has pure stock of any breed. Value of stock the past year has increased twenty-five per cent. No diseases among cattle.
7. There are no good stock horses in town. About every horse was diseased last fall. No case fatal.
8. Sheep breeding in town is general. No particular breed. All think that at present they pay best of any stock. About seventy dogs taxed, and very few sheep killed.
9. About one-third of the area of town is forest. About one-half old and one-half young. It is increasing. Pine, hemlock, ash, red oak, white birch.

MADISON.

[Reported by the Selectmen.]

1. We find but one farmer in town that will acknowledge he can make both ends meet by farming, alone. Thomas F. Marston devotes his time entirely to farming, the principal products being hay, wheat, corn and fruit. The soil of this town is either very rocky and hard to cultivate, or so sandy and light as to be nearly worthless. Very few support their families solely by farming.

2. We think farmers are more intelligent, live in better buildings and have more luxuries, but do not work so hard as formerly. They make more money by speculating and lumbering than by farming.

3. Near three-fourths of farmers' sons leave town for the cities, preferring most any occupation to farming. Five per cent. of the farms have been abandoned within the last ten years. Cause: unproductive soil, and a disposition to procure a living without physical labor.

5. We make no discrimination in favor of any class, but appraise all taxable property as near its true cash value as practicable. Our appraisal of property in this town the present year is at least thirty-three per cent. higher than any of the neighboring towns.

6. Our stock is native and mixed breeds, principally Devon and Durham. No particular disease.

7. About one-half the horses suffered with the disease. No fatal cases.

8. About one-third of the farmers keep sheep. Native breeds. We think it pays best of any stock. No disease. Forty-seven dogs taxed. No sheep killed by dogs.

9. One-half of the area of the town is covered with forests, nine-tenths second growth. The amount of wood and timber is diminishing rapidly since the railroad was built two years ago. Mostly exported. Most valuable varieties, pine, hemlock, birch and maple.

10. Hay, corn, oats, potatoes. The greatest income to the farmer is stock, and in some cases, wood, timber, bark, etc.

11. Apples are abundant. Some grapes and other small fruit not much cultivated.

12. Wages have increased fifty per cent. in the last two years, especially for female labor.

MOULTONBOROUGH.

[Reported by the Selectmen.]

1. Very few, if any, make money.
2. In our town probably not over three per cent.; cannot obtain exact figures in any one case. Think that farmers are more intelligent, and perhaps have better buildings than formerly. Interest money as a class does not increase much. Do work harder.
3. Fully eighty per cent. Ten per cent. of farms have been abandoned. Cause: young men leaving for city and other States; labor scarce and high.
4. Larger part somewhat disheartened, and many farms for sale.
5. Make no distinction in our appraisal. Property of all kinds taxable has been appraised at about half the real value. We have increased our valuation this spring about thirty per cent., and our property both real and personal is taxed for about what it would bring at auction, we think. Never has been any discrimination in favor, or against the farmer.
6. No pure blood neat stock in town. About the average in number and value for past ten years. No diseases within the past year.
7. But two stallions in town and those of common stock. Probably ninety per cent. of horses were attacked with the horse disease last fall. Very few fatal cases. Nearly all have fully recovered and are as valuable as before they were sick.
8. W. H. H. and B. M. Mason, have, in our opinion, the best flocks of blooded sheep, Cotswold, Leicester and South Downs. They think their income is larger than from any other stock. Have not suffered by disease. One hundred dogs were taxed last year, and our bills for sheep destroyed were somewhat in excess of the dog tax collected.
9. For an estimate, we should say about sixty per cent. of area is covered with forest, and nearly half is new growth. Wood and timber are diminishing. Lumber exported. Valuable varieties, spruce, hemlock and oak. Have no kinds not common in adjoining towns.
10. Leading crops, oats, potatoes, corn, etc. Sources of income, stock raising, timber and wood selling, etc.
11. Apples, principal fruit; some grapes grown and a few pears and peaches. Estimated value of amount, \$300.

12. Demand for labor this spring is in excess of supply.

Not until our laws are changed so that some inducements are held out to tempt our young men to stay on the farm can this section of the Old Granite State experience a better state of things. So long as the rich man's money can be placed where it cannot be taxed, and the farmer has to pay the revenues of the State and country, so long will the enterprising youth seek employment and invest his earnings in something more remunerative than a New Hampshire farm.

OSSIPEE.

[Reported from statements made by James Nute, Jr.]

1. None making money more than supporting family.
2. Three or four per cent. The owner would do better to let his farm at six per cent. and work out at two dollars a day.
3. Nearly all young people leave the farm.
4. Still leaving.
5. Taxation equal.
6. Not so much neat stock as formerly, on account of small hay crop. No disease.
7. No loss from horse disease, and no depreciation.
8. Sheep profitable, especially when well selected, or bred and carefully tended. No diseases.
9. One-third is wood. Cutting off some. Not much worked up in town. Hemlock, spruce, maple, beech, etc., the leading kinds.
10. Grass, grain and potatoes are the chief crops.
11. Apples, some pears and wild fruit.
12. Labor scarce and poor.

SANDWICH.

[Reported by the Selectmen.]

1. None. Reason, scarcity and high price of labor.
2. Farmers as a body live in better buildings, are more intelligent, have more luxuries, have more money at interest, do not work as hard as formerly, (say forty years ago.) The percentage, after placing the farmer with reference to his investments on the farm in the same relation with the merchant with his stock in trade, will be too small to compute.

3. Nineteen-twentieths of the sons of farmers leave their homes for other pursuits. One-fourth the farms have been abandoned or united to other farms within ten years. Reason, other occupations are more remunerative.

4. The farmers this spring are more inclined to leave their pursuits than ever before.

5. In the assessment of town taxes we appraise farm property compared with village residences in the same proportion according to value. The valuation of the farmer's lands, stock and other property is a much larger proportion than merchandize, stocks or manufacturing interests; not over two-thirds true cash value in appraisal; some discrimination in favor of the farmer.

6. No one has any pure blood neat stock. There is less neat stock than in former times; the value per animal much less than in war times. No particular disease has affected neat stock within the last year.

7. No valuable stock horse owned in town; nineteen out of twenty suffered from the horse disease last fall and winter; none died; present condition generally good; no depreciation in value.

8. No sheep breeders in town. A few farmers think it pays, though but very few are kept. Ninety dogs taxed. The value of sheep annually killed or maimed by dogs not over ten dollars.

9. One-half the surface of the town is covered with forest trees, about one-third old growth; the amount of wood is annually increasing at the rate of twenty-five per cent.; the lumber cut in town is mostly exported; the valuable trees for timber are spruce, hemlock, poplar and pine; no special varieties not common to other sections.

10. The leading farm crops are hay, oats, Indian corn and potatoes; no new valuable practices adopted by farmers; sources of income are the raising of neat stock, horses, and butter making, and also maple sugar.

11. The kind of fruit produced, apples; no other worthy of note, and the crop very uncertain; impossible to tell the value of the average amount.

12. The demand for farm labor is quite large; there is not an adequate supply.

TAMWORTH.

[Reported by L. D. Mason.]

1. Thomas Perkins and son, on the Hubbard farm, are making money by farming, and are not injuring their farm. The reasons why they make money are: First, they work hard themselves; second, they are economical; third, they are good calculators, and finally, they have the best farm in town. For crops for market, they raise white beans. I am informed they plant twelve bushels of seed beans. No other farmer in town making money that I know of.

2. The farmers in Tamworth have but little chance to compete with other branches of industry. That class of farmers competent to mingle a successful traffic with agriculture, have more money and better buildings than formerly; the others have not. Our schools are tolerably well supported, and in point of intelligence, the present would compare favorably with the past. They do not work as hard, they live better, and have more system to their economy.

3. But few of our young men can be persuaded to work on a farm, and this few is not always the most ingenious class. At least, ten per cent. of farms have been abandoned or joined to others, within a few years. Reasons why: During the first forty years of my life, good field hands could be hired most of the year for one-half bushel of corn, or four pounds of pork a day, and board. Now it takes five pecks of corn, or eight pounds of best pork, to hire a common laborer a day, and a day's work will only produce one-half as much pork or corn as formerly, when our land was new. Also several small manufactories have sprung up in town, which are paying farmers a big price for their surplus wood and timber, and then pay big prices for help to manufacture it. The result is more abandoned land is now covered with young timber, worth more than the farms formerly were for farming purposes.

4. Is the fever abating? I think not; pulse full one hundred at present time.

5. Here exists the abomination that threatens to make desolation. No class of people so oppressed by taxes as the farmer. My property is about equally divided; one-half is invested in good farming property, the other in trade. My farming property

is taxed much higher than the property in trade. My farming property about pays its running expenses, my store supports my family.

6. But very little pure blood stock in town. No great account made of it. Less quantity of stock in town than formerly, owing to the short hay crop two years ago, and stock has not yet recovered its former numbers. Six-foot oxen used to vary from forty to sixty dollars, now worth one hundred to a hundred and twenty-five dollars. Good cows very high. No diseases among our stock.

7. No full blood horses in town. One good horse graded from Black Hawk. All our horses suffered with horse disease; a portion of them left with a cough.

8. No extensive flocks of sheep; we keep a mixture of various breeds. A pure native is best for early lambs, and at present prices, sheep are more profitable than other stock. No disease among our sheep. We lose but few sheep by dogs, but our dogs are a great nuisance. Every very poor family, of course, has a dog, and some very well-to-do families keep them.

9. Wood, suitable only for fuel, is increasing, but timber is decreasing. We have some six, or more, regular manufacturing establishments, working up hard-wood timber into bedsteads, reels, bobbins, shuttles, handles, etc.

10. *Farm Crops.* Hay grows in abundance; potatoes pay best to cultivate on most of our lands. Corn and grains grow well, but don't pay at present price of help.

11. The apple tree abounds among us, and with a very little care, yields the greatest income according to cost.

12. It is nearly impossible to procure competent help for the farm, indoors or out. The only help for this important requisite is for the farmer and his sons to do the work out doors, and his wife and daughters to do it in doors. This is the only way I can find to get it done as it should be, especially at prices to be justified by the income of the farm.

In conclusion, our New-Hampshire farmers get more pay for laboring on the farm than do the Western farmers who raise corn and carry it to market, for fifteen to twenty-five cents a bushel. We must encourage manufactories all over our State, as each establishment requires the product of the farm in a green state, and at high prices.

TUFTONBOROUGH.

[Reported by the Selectmen.]

1. No farmers making money. Why? because of the high taxation and high price of labor.
2. Farm culture don't pay a per cent.
3. Three-fourths. One-sixth of the farms have been abandoned. What causes the result, etc.? The first answer answers this.
4. About as usual.
5. We have no means of knowing, having no village or manufacturing corporations in town.
6. No pure blood stock but grade Durhams mostly. Less than in former times. Not so high as it was ten years ago. Value decreased. No diseases.
7. John N. Barrett, Morgan; Orren H. Durgin, Black Hawk. Three-fourths the horses suffered. None fatal. Condition, good as before.
8. James H. Neal, Daniel D. Wingate, John E. Bennett and Jeremiah P. Horne; a mixture. Some years it pays, but not always, usually other stock better. No disease. One hundred dogs. Damage by dogs, perhaps fifteen dollars per year.
9. Forests and bushes one third, a small part of old growth, one half under twenty years of age. Wood and timber increasing. Lumber exported mostly, *i. e.*, in the log. A few bobbin and shingles manufactured. Wood, beech, maple, birch and oak timber, pine, hemlock, spruce and poplar. No uncommon varieties.
10. Corn, wheat, potatoes and oats.
11. Apples, pears, grapes, etc. There is a small amount of profit of apples.
12. Farm labor one dollar per day for the year; women, three dollars per week for the year. No requisite supply.

WAKEFIELD.

[Reported by the Selectmen.]

1. I would say that no farmers in town, to my knowledge, are making money solely by farming. When we reckon the interest on the value of the farm (the capital invested), the cost of labor in carrying on the farm, the taxes, wear and tear of implements, etc., in nine cases out of ten the amount expended overbalances the amount received, leaving a balance against the farmer. Now the reasons for this state of things: high taxes, high price of

labor, our farms are not as productive as formerly, the soil is growing poorer for the want of dressing and is becoming more and more exhausted of those qualities necessary to produce a crop. There are very few farmers in town who can support their families, pay all necessary expenses arising during the year, unless they work at something else some part of the time, or sell some of wood or timber, which must make the value of the farm less.

2. This question is answered in reply to the first; we can get no per cent. where there is no basis. The chances are the mechanic can make more than the farmer, or in other words is better remunerated for his labor; think farmers as a body are more intelligent than in former times; in this age of progress the advantages for education and the general diffusion of knowledge are much better than formerly. Their buildings are kept in better repair and generally more convenient; think farmers work as hard as formerly; necessity compels them to do so on account of the scarcity of help; do not think they are any more economical.

3. Very few young men remain on the farms; probably seven-eighths of the farmers' sons leave the farm for some other business that will pay them better. Do not know as many farms in this town have been totally abandoned within the last ten years, or turned to wood and pasturage, unless the occupants have died and there has been no one to live on them and manage. We can look ahead with no other view than that the farming interest in this town must continue to manifest a downward tendency unless something arises to make a change for the better that shall enable us to get as good compensation for our farm labor as other labor pays.

4. Do not think farmers are more inclined to leave their pursuits this spring than during the few past years; they cannot have full confidence in the soil to very well pay them for their pains, but those who have farms there is their home, and they content themselves to remain and do the best they can, and try to make a living from year to year.

5. In the assessment of taxes our aim has been to appraise property on an equality as near as possible. About five years ago the town chose two assessors to act with the selectmen in making a new appraisal of the real estate in town and the taxable property was appraised at very near its true value; since that time we have been paying more than our proportion of the State and county tax, other towns not coming up to the requirements

of the law, but appraising for about two-thirds the actual value and in many instances considerable lower than that. Do not know that there has ever been any intentional discrimination for or against the farmer on the part of the appraisers for taxation.

6. The stock in town is mostly of the old native blood, but very few cattle claimed to be of other blood. Mr. Benjamin Edgerly at Union owns a heifer, four years old, of the Durham blood, that girts about seven feet. The value of stock is higher than in former times. Do not know as any disease has prevailed among stock for the past year.

7. There are no stock horses in town of very high price and I do not know what blood. The horse disease prevailed to some extent last fall and first of the winter, but I think they all recovered and are as well as before. Horses have not depreciated in value; good horses will sell for a good price.

8. There are but few sheep in town compared with the number of former years; they are mostly either wholly, or in part, of the old native breed; there are some South Downs, some Cotswold; they have not suffered from disease, to my knowledge, to any extent. Sheep pay as well as any stock the farmers can keep; there have been but very few sheep killed by dogs. We taxed forty-four dogs last year; this year the dog tax is fifty-one dollars.

9. As to what proportion of the town is covered with forests would be a matter of estimation. I should say all of one-half is covered with forests, a part new and a part old growth; the wood and timber are diminishing; the lumber cut is mostly exported after being manufactured. We have the pine, spruce, hemlock, maple, oak, birch, beech and ash, as most valuable. We have no varieties not common to other sections.

10. Farm crops, hay, corn, wheat, oats, barley, potatoes, beans and apples are the leading farm crops.

11. We have apples, pears, quinces, peaches, plums, cherries, grapes, cranberries, gooseberries, currants; we have no means of knowing the average value of the amount.

12. It is almost impossible to get good help; it is not to be found in town and if it can be got is of a high price; farmers have to do what work they can do themselves and let the rest go undone. I think farmers should till what they can do well, and dress well that they may keep up as much as possible the fertility of their fields and not let them grow poor through starvation; but it is not within the reach of many, on account of the high

prices paid for it, to get fertilizers in sufficient quantities to dress their lands. So long as the products of the farm will not pay for its own cultivation, its taxes, and fertilizers enough to keep it in a good state of productiveness, farming must remain an uphill road.

WOLFEBOROUGH.

[Reported from statements made by the Representatives, Libby and Smith.]

1. Not many farmers make money from the farm.
2. Not more than two or three per cent. Have more comforts than formerly, and some money at interest.
3. Boys are leaving the farm generally.
4. The fever still prevails.
5. Farm property has been equalized with other property this year.
6. Neat stock has improved. No disease.
7. The horse disease prevailed in the west part of the town more than at the east, only a few died. No depreciation.
8. Few sheep. Lambkill abundant and destructive to lambs.
9. One-third of the town is in wood, much of it is cut and worked into boxes.
10. Grass, corn, wheat, etc., are the leading crops.
11. Apples and wild fruit.
12. Help scarce.

MERRIMACK COUNTY.

ANDOVER.

[Reported by the Selectmen.]

1. Only one. Augustus Shaw is making money by farming. He succeeds by economy and excellent management of a good farm, finely adapted to the rearing of sheep and cattle.

2. On an average, not more than three per cent. We think our farmers, as a body, are more intelligent, live in better buildings, have more conveniences, and more money at interest, than formerly. We think they do not work as hard, and are generally less economical.

3. Nearly half; a small proportion; because other pursuits hold out greater inducements; we think it has an injurious effect upon the prosperity of the town.

4. We do not perceive that the inclination to leave the farm is more conspicuous this spring than formerly.

5. In the same ratio, and appraise all for what they would be taken in payment of debt. No discrimination.

6. No blood stock, and less stock and of less value than most of the time for the last ten or twelve years.

7. Carlton J. White; descendants of Ethen Allen, Kearsarge; nearly all had the disease; no fatal cases; it has taken most of them a long while to regain their strength and spirits; slight depreciation.

8. A. Shaw, Urial Rollins, D. Thurston, J. D. Philbrick, W. Graves, Silas C. Fifield, C. J. White, Ziba Severance, H. Fifield, Frank Pettingill, James Sullivan, Herod Thompson, A. M. T. Browne, keep sheep and find it profitable. Breeds are the Merino, Cotswold, and a mixture of these and some of the older breeds. Sheep have not suffered from disease. Between seventy and eighty dogs taxed. Average loss of sheep by dogs, about twenty dollars.

9. Nearly a fourth of the town is in wood; new growth, mostly. Manufactured into hames and pegs. Pine, maple, oak, ash and birch. We have no uncommon kinds.

10. Grass, potatoes, corn, wheat and rye, are the chief crops. But few of our farmers have the means to introduce new practices. The raising of cattle, horses and sheep, the products of the dairy, and the sale of wood and timber, are the sources of income.

11. Apples, pears, cherries, plums of various kinds, raspberries, blackberries, blueberries, currants, etc. Three thousand dollars in value.

12. Quite a demand during the summer for labor. There is not enough of the right kind. More care in the expenditure of money in luxuries, and for dress and fashion, will be the remedy for farmers who fail to succeed.

BOW.

[Reported by the Selectmen.]

1. There are a few farmers in this town making money solely by farming, mainly by selling butter and milk.

2. Farming does not pay any per cent. Farmers live in better buildings; have more conveniences; they do not work so hard and are not so economical as formerly.

3. Should think four-fifths of the sons of farmers leave the farm for other trades and occupations. Five per cent. of the farms have been abandoned to wood and pasture, caused principally by the owners dying or failing in health, then the lumber dealer gets them (the farms), takes the wood and timber off and lets the land go again to wood and pasturage.

4. Farmers are not any more inclined to leave their pursuits this spring than in former years.

5. We cannot answer this question properly as we have no city or village property to tax; our saw and grist mills and stock in trade are taxed in the same proportion with farms.

6. Isaac and H. K. White own pure blood stock of the Jersey breed. There is less neat stock in town than at some former times. No disease in neat stock the past year.

7. There are no stock horses of value in town. Nearly all the horses suffered from the horse disease last fall. Three or four deaths from the disease. Horses in as good condition this spring as we have ever seen them.

8. There are only about two hundred and thirty sheep kept in town, scattered all over town; no particular breeds. Seventy dogs are taxed in town this spring. The town has not paid a dollar for sheep killed by dogs since the dog law was passed.

9. One-half the area of the town is covered with forests, one-fourth old growth. The wood and timber are diminishing. The timber cut in town is exported.

10. The leading farm crops are hay, oats, corn and potatoes.

11. The kinds of fruits are apples, pears, grapes and currants.

12. The demand for labor exceeds the supply.

[Second Report, by Harrison Colby.]

1. With the exception of a very few who raise stock, milk and hops, farmers are not making money because they manure for corn and potatoes instead of for grass.

2. The per cent. which farms pay is very small, wood lots mostly cut off, the interest on the money obtained for them being considered more than the growth of the wood. They have a few labor-saving machines for mowing and sawing. This town is of a stereotyped nature, especially so as far as agriculture is concerned.

3. Nine-tenths of the young men leave town for railroads and shops, and some to get an education when they will seek profes-

sional business somewhere else. The number of deserted farms and farms that have been divided are nearly equal, not materially affecting the prosperity of the town.

4. The confidence in the power of the soil is unchanged.

5. Ours being a rural town all are supposed to be taxed as near cash value as possible.

6. With the exception of a few Jersey cows the prices of stock do not vary much from former years. They number less but western beef keeps down the price. No disease.

7. Probably seven-eighths of the horses had the disease, which did not injure them much; none that were properly cared for. No stock horses.

8. There are but few sheep in town, no disease. But few dogs.

9. Nearly half of the town is covered with wood growth, most of which is young or sprout land; the wood and timber suitable to cut are rapidly diminishing. Most of the lumber is sawed in town by water and steam mills. The wood is sold for railroad and brickmaking business. Pine, chestnut, birch and oak are the varieties.

10. Corn, potatoes, wheat and oats with some hops are the leading crops with a moderate supply of hay. Considerable stock is sent to mountain pastures in other towns.

11. Apples are the principal fruit, from which hundreds of barrels of cider are made and large quantities of apples sold; many farms have pears and some small fruit, also cherries.

12. The demand for labor is in excess of the supply; it cannot be got.

BRADFORD.

[Reported by the Selectmen.]

1. We have some excellent farmers in town: Josiah Eaton, John Hill Eaton, David H. Hartsorn, Elisha H. Eaton, Addison S. Cressey, Cummings Pierce, Samuel Wheeler, Benjamin F. Davis, Col. Mason W. Tappan, Edmond Johnson, J. Albert Peaslee, Hiram Nichols, Jonathan Andrews, John W. Morse, John H. Collins, Almon S. Howlett, George W. Baker, William Trow. Albert Eaton, Benjamin F. Hoyt, Eben Cheney, Amaziah Hall, Horace C. Felch, Jonathan Peaslee, Page W. Cofran, Eben G. Stevens, Josiah Butman, Asa Knights, William O. Heath, Henry Piper, Sharon Jameson, George William Ewins, Asa Marshall.

Stephen Morse, Frederick Cheney, Charles P. Pike, Ira H. Sargent, David Morse, Jr., Jonathan Blaisdell, Ruel F. Wheeler, and some others.

2. Many farmers labor under disadvantages. We consider the farmers to be as intelligent a class of men as there is on the earth. But excessive taxes and failure in the crops have materially lessened their income for the past few years. Last year helped them, and with an increase in their hay crop this year they hope to keep larger stocks and save the expense of buying hay and grain. 1870 and 1871 were hard years for our farmers. Some of our farmers live in fine, commodious buildings, and enjoy the comforts of a farmer's life. Some few have money at interest. They are more economical than they were five years ago, from the reason that they are compelled to be. The per cent. of profit is very small.

3. Three-fourths leave the farm for trades and other pursuits. The great desire is of every one to make money faster. About one eighth part of our farms in town are abandoned to wood and pasturage, or have been united with other farms, the past ten years. The cause is traceable to the fact that farming does not pay very large and from the fact that the young men go away and seek money faster and the burdens bear too heavily on the old folks at home. And whilst the legislation of our country is wholly absorbed in the interest of railroads and manufactories, or corporations, or monopolies, this state of affairs must continue.

4. The fever is practically the same.

5. In the assessment of property in this town the aim ever has been to appraise it at its true cash value.

6. J. Albert Peaslee has fine native stock; Col. Mason W. Tappan has a very fine native stock; David H. Hartshorn has a fine stock, Durham; Emri Rowe has a fine stock, Devon. One of the finest bulls two years old in the State. Less neat stock than formerly in town. They are more valuable than they were five years ago. Our stock has not been affected by any disease.

7. We have some good horses in town, but none that we can refer to at this time for breeding. The horse distemper prevailed here during fall and winter, and was quite universal. But two or three cases only were fatal. We do not think that it has injured their value; time will tell us whether we are correct in that decision.

8. Asa Knights has a stock of sheep, their breed is a mixture

of Leicester and South Down; David H. Hartshorn also has a flock, principally South Downs; George W. Baker has a flock and is mixing his South Down with Cotswold; has a fine buck which cost him one hundred and ten dollars; William Frost has a fine flock, principally South Downs; Alden W. Rowe has a large flock, the same. Others in town have some, more or less, and although with few flocks of Merino, as Mason B. Presby's, yet the other breeds are the most hardy and, of course, profitable. Our sheep are free from disease. There are ninety-seven dogs taxed in town this year. It is estimated that there were killed by dogs, one hundred dollars worth.

9. Not more than one-twentieth part of the area of the town is covered with forests. The amount of wood and timber in town has diminished very rapidly the last five years. Nine-tenths of the lumber is exported. Clothes pins are the principal manufacture of what wood remains in town. Some doors, sashes, coffins, caskets, etc. Pine, white ash, white maple, rock maple, elm, etc.

10. The main crop is hay; this our farmers make an effort to secure as much as possible. Potatoes and oats find a ready market. Corn is a crop that is indispensable, but seldom sold. Our farmers are very industrious and labor hard and make use of every privilege, as far as possible (speaking generally). They take many agricultural papers, and seek information wherever they can find it of a practical nature.

11. Apples are the principal fruit. We have the berries common to the country. There are some valuable graperies in town that render an income from fifty to two hundred dollars.

12. There is a scarcity of labor in this vicinity both of men and women, for reasons stated in number three. Give us an even chance with the rich man, let his property bear the fair proportion of the burdens, and do away with the saying "that the rich man pays the taxes." For, sir, they only pay them out of the poor man's pocket. It is useless to write reform unless the people want it. But if they want it, then the leaders in the battle should so drill the forces as to bring about a result that will be of some more benefit than simple legislation.

In short, do away with monopolies, give plows and grass seed to the poor farmers that are struggling for existence, and thus help them to the surface long enough so they can breathe and speak for themselves.

DUNBARTON.

[Reported by C. G. B. Ryder.]

After a consultation with several of our best farmers, it was fully agreed that there were no farmers in this town who were making money solely by farming, and at the same time keeping up the value of their farms and supporting their families. There are some farmers who are improving their farms to some extent, yet not getting much money ahead. The reasons for this are various. First of all is the difficulty in getting good help at a fair price; second, the uncertainty of many of the crops at the present time. Another reason, is the enormous taxes which are imposed upon farmers in many towns. Other reasons might be named.

2. In answering this question, I can do no better than to take a farm with which I am acquainted, considered about an average, and make a debit and credit statement. The farm I have in mind, contains something over one hundred acres, has an average soil, and is, perhaps, as easily carried on as other farms of its size.

Average Income. 100 bushels corn, 150 bushels potatoes, \$190; 25 bushels of wheat, 75 bushels of oats, \$95; growth of stock, \$150; income of 5 cows, \$200; pork sold, \$30. The growth of wood on this farm is small, say \$50; improvements \$50; fruit, \$100; income of kitchen garden, \$15. To this might be added 20 cords of wood for fire, worth, on the stump, \$1 per cord, \$20; making a sum total of \$900. To this amount may be added house rent, which I think should be reckoned in favor of the farm.

Expenditures. Labor of man and wife, \$500 (a low estimate); first-class hired man, \$25 per month; board in addition, \$12, amounting to \$37 per month, or \$444 per year; taxes, which are lower in this town than in most towns, \$100; blacksmith's bills, \$25; wear and tear of tools, carts, carriages, harnesses, etc., \$50; fertilizers, seeds, and grain, \$50; annual repair of buildings, \$50. to this should be added the help of two boys belonging to the family, with some extra help by the day, etc., also the help of two girls in the house, who take the place of a girl hired, the whole being reckoned low at \$200, thus making the whole amount of really necessary expenses of the farm, \$1,419, leaving a balance against the farm of \$519. The question then comes, how does this farmer live? Well, how does he? Five hundred and nine-

teen dollars against him in the management of the farm, to which may be added the interest of a \$6,000 establishment, including farm tools, carriages, stock, etc., \$360 more, amounting to \$879. Then there are the necessary expenses of the family, such as clothing, books and papers, schooling, groceries, and many other things, swelling the amount, perhaps, to the round sum of \$1,500. To live, in the first place, the man and wife must cross out their salaries of \$500; that of the children must also be erased, making \$700, save a few dollars paid for extra help by the day and otherwise. Then the interest on the estate must not be reckoned, \$360 more, and we have \$1,060. The board of the hired man is also reckoned out, \$144 more giving a sum total of \$1,204; there is still a deficiency which must be made up in various ways, of nearly \$300; sometimes by taking a few boarders in the summer, or by cutting and selling a little extra wood and timber, or more often, at the neglect of the educational interests of the family, or in the necessary rest or clothing of the housewife, or it may be sometimes by a little outside speculation.

I think the above is a true and honest statement of the farm I have in view, and it shows a better footing than many others. You who live in cities, merchants, mechanics, manufacturers, etc., can judge better than we, whether farmers labor under disadvantages or not. I leave it with *you* to reckon the percentage. I think farmers, as a body, are more intelligent than formerly, owing to the advanced interests in education, and as they grow more intelligent, it is but natural they should look more to the outward adornment of their buildings and surroundings. The same reason, together with the necessity of doing as much labor with as little help, as possible, lead them to study convenience, as well as comfort, in all their farm operations. There is, perhaps, more money at interest, though it is held by as few, or less number of individuals than formerly, brought about by the sale of wood and timber from the farms. It would be safe to say that more than half the farmers in this town are in debt, and many of them, under the present state of things, almost hopelessly so. Farmers here have always worked hard, finding but little time for recreation, and are as economical as the times will allow.

3. Four-fifths of the young men, at least, leave the farm. Not more than three per cent. of the farms are abandoned. Some fields, at a distance from the buildings, have been turned to pasture. Very few have been united to other farms. A sale of the

wood and timber has been the cause so far as this has been done. No great damage to the town in this respect.

4. Not much change. Our farmers believe farming ought to pay, and many farmers are looking to new sources of income, in order that they may receive a fair compensation for their labor, support their families, and lay by something for a "rainy day." Some men would like to sell their farms, but as the sales of farms are limited, they are not willing to make the necessary sacrifice to dispose of them.

5. This being exclusively a farming town, no distinction can be made between the appraisal of farms and other property. The plan usually adopted is to appraise real estate at about two-thirds its real or estimated value; personal property at what it would bring at a forced sale.

6. There is now no pure blood neat stock in town, except a few bulls. H. E. Ryder has a Devon, William C. Stinson a Durham, and J. P. Jameson a Jersey, also a few heifers, all pedigreed animals. The number of neat stock is gradually diminishing. The cash value of animals varies with the seasons. The real value is about as in former years. No disease has prevailed among neat stock the past year.

7. No blood or stock horses are owned in this town. Nineteenths of the horses suffered from the disease last fall; the ratio of fatal cases was, perhaps, one in forty; it is not generally thought the disease has had any lasting effect upon the horses.

8. But few sheep are kept; they are of a mixed breed; no disease has prevailed. The amount of damage done by dogs last year was \$57.50, while the income by taxation was but \$52; this is the highest ever paid; the average for years past has not exceeded \$20.

9. From one-fourth to one-third of the area is covered with forest. One-third of this, perhaps, is under twenty years' growth. The amount of wood and timber is rapidly diminishing. Good judges estimate that ten thousand dollars' worth of wood and timber of various kinds have been taken out of the town every year, on an average, for the last twenty years, to be manufactured in other places. The most valuable timber we have is pine, hemlock and chestnut, and only such other as is common to this vicinity.

10. Corn, potatoes, wheat and oats are the leading cultivated farm crops. Don't know that any new practices are adopted,

although farmers vary their modes of cultivation, application of manure, etc. In the west and south parts of the town, we have a new source of income, out of which we hope to get full pay for all the expense attending it, and something besides. A milk route has been started on the Manchester and North Weare railroad, furnishing for the Boston market, and the farmers along the line of the roads in this town, as well as other towns adjoining, are entering into the raising of milk with much zeal. The business is now in the second year of its trial, and thus far the farmers have more than realized their expectations. They believe they are getting better pay for their labor, and the cost of keeping cows than they ever have in any other way. Aside from this, and the sale of wood and timber, there are no other special sources of income. There is, however, some market-gardening done, we believe with good success.

11. All kinds of fruits adapted to the climate are raised in town, though none to any great extent, except the apple. Their value might be safely put at five thousand dollars annually. Many new fruit trees, of all kinds, are annually sold here by the nursery men. Large quantities of blueberries are annually sold from several farms, finding a market at Concord and Manchester. Mr. T. C. Ryder, the largest producer, sells, in favorable seasons, to the amount of two hundred and fifty dollars — has exceeded that amount.

12. The demand for labor exceeds the supply. In-door help can hardly be had at any price. It is generally believed that the poor quality and the high prices of help, are among the greatest drawbacks farmers have to contend with. I know of no remedy unless it is to curtail farm labor and do with less help. As a further statement, and by way of explanation, let me say, farmers are not wholly discouraged, we are looking for a "better time coming." We believe we are as well situated in Dunbarton as in most towns in the State, for farming purposes. Our soil is good for hay and all kinds of English grains, fruit, etc. Distance from market is not so great as to be discouraging. Taxes are low, compared with many other towns. The rate this year being ninety-six cents on the hundred dollars. Poll tax, ninety-six cents. The town is out of debt, and some hundred dollars in the treasury. On the whole, we think Dunbarton is a good town in which to buy a farm. We hope a reaction may soon take place, and we shall see people looking more after real estate in the

country. The Legislature can do much to help the farming interest by enacting such laws as shall benefit the farmer, as well as the manufacturing and other interests. Farmers are now taxed to the utmost farthing. Why should not mechanical trades of all kinds, medical and legal professions, and all others, be taxed as so much real estate? A majority of our representatives are farmers, let them look out for their own interests.

FRANKLIN.

[Reported by B. S. Hancock.]

1. There are none making money; the reason why is because the price of labor, taxes and farming tools are so high.

2. The percent. farm capital pays. We think the farms of this town pay less than one per cent.; they have better buildings and indulge in more luxuries than formerly; they have less money at interest than formerly, but do not work any harder than our fathers, and are not so economical.

3. More than nine-tenths of all the young men leave the farm for other occupations.

4. We think the fever is about to its height, because people begin to be alarmed on this subject.

5. There is no partiality shown any class in our town, but we appraise all property at what we think it would sell for under a pressed sale.

6. There is no pure blood neat stock in our town, but some nice grades; the number has decreased more than one-half for the last thirty years and the value increased more than fifty per cent.

7. There is one nice Morgan stock horse owned by Ariel K. Moore, of our town, and kept at his stand where there can be seen a dozen of his sire. About every horse in town suffered from the disease last fall and winter; fatal cases very limited; we think it has depreciated them in value a very small per cent.

8. We have a few sheep breeders in town; Wallace Burleigh, Alfred A. Gill, David G. Heath, and Charles Smith, have nice flocks of fine wools, and Charles H. Cross, Deacon George C. Ward and Moses S. Morse have good flocks of coarse wools. Our farmers think that sheep would pay best of any stock kept on the farm if the dogs could be annihilated; no disease among sheep the last year. Number of dogs taxed in our town in 1871, one hundred and fourteen; in 1872, one hundred

and ten; in 1873, one hundred and fifty-nine; so you will perceive dogs are on the increase; damage paid by the town, done by dogs for the last year, is over one hundred dollars; we would suggest a more stringent dog law; most every family that cannot feed their children keep from one to two sluts in this town; our farmers say that they must give up sheep raising on account of dogs; it consumes too much time to watch their flocks; we suggest that the Legislature pass a law that all dogs or pups be registered and collared by the town clerk, and tax paid at the time of register, and so continued annually; this would do away with a great deal of trouble and false swearing about the nuisance.

9. About one-eighth of the area is in wood and timber, mostly second growth; pine, hemlock and oak for timber; mostly consumed in town for building purposes; for wood the growth is birch, beech, maple and oak mostly; the consumption in our town exceeds the growth more than two hundred per cent.

10. The leading farm crops are hay, oats and corn, and potatoes on a small scale.

11. Considerable fruit, in apples mostly, which our farmers consider a paying crop; considerable native fruit in the berry line.

12. The labor question; there is more demand than supply; it is most impossible to procure any help that is competent for the situation in doors or out on the farm.

HENNIKER.

[Reported by F. E. Colby.]

1. Scarcely a man in this town will admit that he makes anything more than a living from farming, though there are some who in my opinion do. Warren S. Childs, Harrison H. Rice, John C. Ray, Hiram Rice, and Abel D. L. Connor lay up money and have no other pursuit than farming, but they are among our wealthiest men and most of them have money enough in banks, railroad stocks, etc., to furnish a fair annuity without farming.

2. Within the past ten years twenty-three per cent of farmers' sons in town have settled on farms, either with parents or alone. Of this number thirty per cent. are now engaged in other pursuits. I suppose they considered that farming did not pay. Twenty-eight farms in towns have been abandoned in ten years or about

one-seventh part of the whole. You ask the cause. The town's quota was filled almost entirely by citizens of the town and most of them farmers (I was one of them,) we went to the war. Parents were short of help, sold their farms, invested their sales in United States bonds or Savings Banks, or securities of other character. Some of us came home and purchased farms. The valuation of those farms was put close up to what was paid and most of them have been kept there. The town's debt by many was considered enormous, some thought we never could pay it. I advocated that to pay the amount in three or five years was our best policy. Eight years are nearly passed and it is now reduced to about \$7000. The burden has fallen most heavily on farmers.

6. There have been Jerseys, Durhams, Ayrshires and Dutch thoroughbreds in town within the past few years, but I do not know scarcely one at present; we like a mixture better. Almost every man's stock now is a mixture or Durham, Ayrshire and native. A thoroughbred Durham or Ayrshire breed of cattle or cow would hardly find a local sale.

7. There are no stock horses in town. Cattle have been unusually healthy for three years. Horses were almost universally affected by the epidemic, with but three fatal cases. Their present condition is good except when they take cold; I think they are more apt to cough.

8. James B. Brown has one hundred and seventy Merinos. Thomas Brownrigg has nearly one hundred Merinos (poor), he does not consider them profitable and wants to dispose of them. These are the only Merinos in town now. I had twenty Merinos seven years ago and eight South Downs. I kept them two years and each year the South Downs were sixty per cent. apiece more profit than Merinos. I changed my flock to South Downs, bought a blooded Cotswold buck and think I can do no better. About one-third the farmers in town now have from five to thirty South Down sheep, and if I had fencing suitable I would stock my farm with South Downs and Cotswold sheep. For potatoes and oats there need be no better manure. There are one hundred dogs taxed in town; sheep have suffered but little by them. Fifty dollars is more than the average damage per year.

9. Between twelve and thirteen per cent of the land is covered with good wood and timber. Wood, maple, beech, oak and ash. Timber, pine, spruce, hemlock, bass, oak, ash and chestnut. Some \$8000 worth of chestnut has gone out of town within the past

year. The pine and oak is mostly used for kits, pails and dry measures. The ash, white oak and bass are exported. There is scarcely any old growth remaining, but hundreds of acres are growing up to sapling and some of it is already good property.

10. The leading farm crops are corn, oats, potatoes, and wheat. The source of income to the farmer is to improve his farm. This is done by diligence, economy and hard work.

11. It is one of the best towns for apples in this county. Concord, Hartford, Prolific, and Delaware grapes, are abundant: numerous other varieties are plenty. Peaches do nothing. Plums are short-lived and pears will do but little on most of our soil.

12. Farm hands are not in great demand except in hay time, for the reason that when procured, as a general thing, they have no taste for farm labor and therefore are not profitable. My hint on this subject would be for every farmer to raise his own help and especially in the house, learn them to take an interest personally in the farm and farm house matters.

NEW LONDON.

[Reported by the Selectmen.]

1. Perhaps ten, by lumbering and stock raising.

2. Not two per cent. He does. Impossible to do that five years at least for a dividend. I think more intelligent in general matters. Better buildings and more luxuries, do not work so hard, are not so economical.

3. I think three-fourths. One-twentieth could not live. Better for the town.

4. More inclined to stick by and more faith.

5. Could not say but believe double according to market value. More. We know of no right for selectmen to appraise property only at its cash value. We know no farmer no merchants, no manufacturers, in appraising property.

6. Some five or six farmers own a few head, Durham, Ayrshire and Jerseys. Greater than before the war but have been higher. We have to give it up. None.

7. No one. We think three-fourths. None. Many cough and some worse than cough. Depreciated about one-fifth, we think.

8. Morgan Knowlton and Messer keep the most sheep. We believe they do. Have not. Fifty-three. About thirty dollars worth.

9. We think about one-eighth. Diminishing perhaps one-fiftieth yearly. Boards, shingles, clapboards, etc. Maple, beech and birch for wood. Spruce and hemlock for timber.

10. Potatoes, wheat, barley and corn, and change of seed, generally for the worse. All the farmer raises and can spare, especially potatoes and live stock.

11. Apples, grapes and raspberries.

12. More than we can get. Not enough. We hint that the farmer had better get along without hiring, if he wishes to keep his farm.

In conclusion, I wish to say I have answered the questions briefly according to my belief, with the time I had to spare, and are as reliable as any you may receive if not so sensible as some. In regard to the appraisal of property by selectmen, although the statutes are definite yet selectmen regard them not, and it is a fact, that while some do their duty and appraise at cash value, others do not more than one-half or two-thirds, and some large manufacturing companies are not appraised at all, because the town voted to exempt them from taxation, and of course pay no part of county and State tax.

NOTE. The New London report came in very late, and consequently was not revised. — *Sec'y.*

NORTHFIELD.

[Reported by the Selectmen.]

1. But very few farmers probably are making money solely from farming; those that do are industrious and good managers.

2. It is very evident that farm capital is not paying much of anything. It is equally evident that farmers are more intelligent, live in better buildings and have more luxuries than formerly; of course they have more money at interest; as to the amount of work some of them do it is comparatively little, unless you take into account their travel to and from the villages; of course they are less economical than formerly.

3. Say nine-tenths of farmers' sons leave for the purposes specified in your inquiry; perhaps one in twenty of the farms will come within your meaning; the causes of these results are evident; the *remedy* is what is not, and needed. Farmers and farm hands do not work near as much as formerly, their expenses

are a great deal more, and the high taxes are a great drawback upon them.

4. To your fourth inquiry we will say that we do not see any particular change.

5. In the appraisal of property for taxation every honest man will of course try to get all kinds of property as nearly equal as possible, and of course we should not want to admit that we did not belong to that very *numerous* class (let each tell his own story). It has been the practice in this vicinity to appraise property at about two-thirds of its value, but farms are not equally valued in this town, as there has been no thorough reappraisal for a long time.

6. There is no blooded stock in town. There is not as much neat stock as there has been some times; they are valued at less than they have been, and also more; no disease.

7. James M. Simonds has a young stock horse of the Morgan type, and a good horse we should say. Perhaps three-fourths of the horses had the epidemic; scarcely any died; they do not appear to be affected by it now, and consequently have not depreciated in value.

8. There is no one that makes a specialty of sheep raising in town; what are kept are native or mixed breeds; have not been diseased. About fifty dogs are taxed; for 1871-72 we paid forty-seven dollars for sheep killed.

9. Perhaps a little less than one-fourth of the area of the town is covered with forests, mostly old growth; the oak is principally freighted off; the soft lumber (pine and hemlock) is sawed here, and principally used for building in this vicinity; the wood is a mixture of maple, oak, beech and birch for hard, hemlock, pine and poplar for soft.

10. Grass, corn, potatoes, wheat, oats, etc., are the leading crops; our sources of income are about the same as other towns of a broken and rocky soil.

11. Apples are about all the fruit we have in our town; perhaps an average in this respect; if you insist upon our estimate of an average crop, for a term of years, we shall have to say, perhaps a little strong five thousand dollars.

12. The demand is good, but there would probably be an adequate supply (especially men's help) if all would do what they might.

SALISBURY.

[Reported by the Selectmen.]

1. Very few farmers in town are making money in comparison to the number that barely live and support their families. Those who do make money do it by hard labor having plenty of help of their own; those who do not make anything are a greater portion of them; the reason for this may be justly attributed to high taxes, together with the cost of hired labor.

2. Taking into consideration the expenses of farming, together with the wear and tear of farming implements, the repair of buildings, high taxes and the education of children, we do not think, as a whole, that it pays any per cent. We think farmers, as a whole, are as intelligent a class as those who obtain a livelihood in other ways. As for buildings, some few are improved and repaired in modern style, and are better than formerly; a portion are kept in a comfortable condition, while others are fast going to decay and ruin. Some few who can avail themselves of the modern improvements in farming are enjoying many more conveniences than formerly, while others have to live more economical, work harder and have less money to enjoy the many luxuries of life. Those who had money in former years have more as it still increases, while others that did not, have not any now.

3. Not more than one in twenty of our farmers' sons stay in town. Some few of our farms have been abandoned because the buildings were burned and the proprietors do not feel inclined to replace them, which results in a decrease in our valuation.

4. The fever is not abating, the farmers being discouraged still continue to have a desire to seek a livelihood more remunerative than the cultivation of the soil, yet many of them being unable to dispose of their farms to any advantage are obliged to farm and live the best they can.

5. In the assessment of town taxes it has not been our intention to make any discrimination in farms, mills and stores. There is but little manufacturing carried on in town. We have appraised our farms about their cash value, but we find on examination that our stores and mills have not been appraised more than two-thirds of their value.

6. We have no pure bloods. There appears to be about

twenty per cent. more of neat stock than eight years ago, and the value about the same. No prominent disease the past year.

7. We have no stock horses of great notoriety. Seven-eighths of the horses suffered from the disease. No fatal cases. No depreciation perceptible.

8. There is no particular interest in sheep raising at the present time and no prominent breeders. In former years there has been an unusual degree of interest as regards sheep raising in town. It has been noted for a good variety of the Spanish Merino, but by comparing statistics it will be seen there has been a great declension within the past six years; then there were over seventy-two hundred in town, now there are about twenty-two hundred. We think that wool raising pays better than other stock. No particular disease. Seventy dogs are taxed in town. About one hundred and twenty dollars worth were killed and maimed by dogs the past year.

9. More than one-half of our town is covered with forest, most of old growth. The wood is increasing, the timber is diminishing; most of our pine is gone. The lumber is sawed into boards and dimensions and exported. The trees for wood are beech, birch and sugar maple; of the last named is a great quantity of sugar made. For lumber, pine, hemlock, ash and red oak. No special varieties.

10. The leading farm crops are hay, wheat, rye, oats, corn and potatoes.

11. We have apples, pears, cherries, grapes, cranberries and currants; also all kinds of wild berries. We have no knowledge of the value.

12. There is no unusual demand for farm or farm-house labor in this town, yet there is a great scarcity of good help of both orders, and wages are of the highest rank; consequently the farmers feel obliged to cultivate what they can with their own hands and leave the rest undone. And as for farm-house labor it is almost impossible to obtain any help, even in cases of sickness, where it is almost indispensable.

WARNER.

[Reported by the Selectmen.]

1. Farmers living on farms of the best quality and of suitable size do make money; but those living on small farms and what are called hard and rocky, are obliged to resort to other ways to obtain money to pay taxes and purchase many of the necessities of life. They often are compelled to cut off and sell wood and timber to supply wants which their farm products do not meet. Farms are not as productive as in former years, and the value thereof has diminished, and many are abandoned and "turned out to pasture."

2. Generally this question seems to be answered in reply to the first. We are unable to state what per cent. of profit the farms pay. We are of the opinion that few pay any per cent. reckoned upon the basis given by you for "estimating." The degree of intelligence among farmers is of course a matter of judgment, admitting of no positive conclusion, subject to no question. There are farmers in our town of superior intelligence and extensive information. Their fathers in their day were regarded in the same way by their townsmen. It is certain that the means of information are greatly increased in our day as compared with those of other times. We are proud to refer you to a special advantage which we of this town possess, which is unsurpassed by any rural town in the State. We speak of the free high school, open to all the inhabitants of the town, endowed with the perpetual fund of \$25,000 — the gift of the late Franklin Symonds and Abigail Symonds, his wife; the house, costing \$10,000, having been given to the high school district, toward which sum Mrs. Symonds contributed \$5,000 in addition to her share of the endowment fund.

3. A large proportion of the sons of farmers do leave the farm for other occupations; they think they can do better; an earnest effort is being made to stop this drain from the town of our best young men, by introducing other branches of industry. During this month a shoe manufacturing company has been organized with a capital of \$50,000. It is expected this movement will do something to add to the prosperity of the town.

4. We do not think farmers this spring are more inclined than ever to leave their farms for other pursuits, though their "confidence in the power of the soil to compensate them for their

efforts" is not enthusiastic. They are waiting to see what the "Mountain Road" and "the shoe factory" will do for them.

5. We do not appraise farm buildings of the same style and quality as high as we do village residences. Real estate at the village is worth much more than farms, relatively. We have endeavored to comply with the law in making our appraisals. Outlying farms have depreciated in value within the last six years, while village property has increased in value, and we have considered this fact in our appraisal. We do not know of any discrimination in favor or against the farmer.

6. Mr. C. G. McAlpine owns pure blood Durham neat stock. There is stock of similar character belonging to the estate of the late Stephen Bartlett. The amount of neat stock is less at the present time than in some former years, but there has not been much variation within the last three years. The value per animal is less now than six or eight years ago, but greater than at periods earlier than that. We know of no diseases of a general character affecting cattle within the last year.

7. We know of no stock horses of value in town. There were only five or six fatal cases of horse disease, and there is now no marked depreciation of value in those which recovered from the disease.

8. Sheep are much less extensively bred in this town at the present time than in the first half of the last decade. With the price of wool ranging above fifty cents, the few principal breeders think it pays better than it does to keep other stock. Last year one hundred and three dogs were taxed; the present inventory shows ninety-six. Last year the dog tax paid eighty-one per cent. on the amount claimed for sheep maimed and killed by dogs.

9. About one-fourth of the area of the town is covered with forests, of which three-fourths is now on second growth. The amount of wood and timber is annually decreasing. The great bulk of timber cut is exported. Bedsteads, chairs, excelsior, clothes-pins and hubs are manufactured.

10. The leading farm crops are hay, wheat, corn, oats, potatoes, apples.

11. Ordinary garden products we are unable to estimate with much exactness the value.

12. The demand for labor is not as great as formerly. Farmers generally have found that it is unprofitable to hire only what is absolutely necessary.

WEBSTER.

[Reported by the Selectmen.]

1. A few only are making money by farming.
2. Capital invested in farming pays not more than two per cent. Farmers are not more economical, nor do they work harder than formerly; they are more intelligent and have more money at interest.
3. From one-half to two-thirds of farmers' sons leave town. One-half of one per cent. of the farms have been given up to wood and pasture growth.
4. They are no more disposed to leave this year than usual, and still have confidence in the soil.
5. We intend to appraise all alike, but still we think the farmer has had more than his share of the burdens.
6. There is less neat stock than formerly. The value per head is about the same. No disease among cattle.
7. No stock horses. About nine-tenths of the horses suffered by disease last fall. Two or three died. No depreciation in value on account of the disease.
8. H. H. and J. L. Gerrish, F. B. Sawyer, Sherman Little and J. C. Pearson are the leading sheep owners. The stock is mostly of fine wools. Dogs taxed, forty-five.
9. About one-fourth of our area is covered with forests. Five-sixths is old growth we think. Wood may not be diminishing, but timber is; it is not manufactured here, much of it. Our valuable woods are white oak, white pine, rock maple, white birch, etc.
10. Grass, corn, wheat, oats.
11. Apples to the amount of \$2000 or more.
12. Demand light. We believe there is a full supply. Many of our farmers think they can hardly afford to hire.

WILMOT.

[Reported by the Selectmen.]

1. We don't find any farmers that are making money by farming, for the reason that our taxes are high, and the crops have been light for a few years past, and wages are high.
2. We are of the opinion, from inquiry and observation, that our farmers do not realize more than one per cent. on the cash

value of their farms and necessary appurtenances. We think the farmer labors under disadvantages, for if his property is all invested in farming, he is obliged to pay tax on all he possesses, while those who have their property in money, can manage so as not to pay any tax on it.

3. About nine-tenths of farmers' sons leave farming for other pursuits, and nearly one-tenth of the farms have been abandoned to wood and timber, and united with other farms for the past ten years.

4. Do not think the fever abating in the least. The most of our farmers are ready to sell if they get a chance.

5. We appraise farms and village residences as near equal, according to their cash value, as possible.

6. There is less neat stock than at some former times, and the value is less per head. Samuel C. Waldron owns two stock horses of the General Lyon blood. But few horses died with the horse disease, but others have depreciated in value, but not to a great extent.

8. The leading sheep-breeders are Joseph B. and John M. Carr. They have one hundred and forty nice coarse-wool sheep. Porter K. Philbrick, one hundred and ten of medium grade. Daniel Tenney, seventy Merino sheep. C. F. Trussell, seventy sheep, mostly fine wool. They think it pays to keep sheep. We get a tax on dogs this year of \$89. The whole amount paid for damage done by dogs since the dog law was passed, is \$71.

9. Probably about one-fourth of the area of the town is covered with wood, and but a small share of that is old growth. The amount of wood and timber is diminishing at a rate, if continued for twenty years, that will cause a great scarcity for home use. It is manufactured into lumber. The varieties of most value are spruce, hemlock, rock maple, ash, bass, birch and poplar.

10. Hay, grain, potatoes and corn.

11. Apples.

12. Farm labor is about one dollar per day by the season, and farm house labor about three dollars per week, and very difficult to get at any price.

HILLSBOROUGH COUNTY.

ANTRIM.

[Reported by G. A. Cochran.]

1. We may have one farmer who is making money by farming, and no more. High taxes and high wages, they are the reasons.

2. If the farmer counts the cost of all his expenses on the farm he will find that it does not pay any per cent., consequently the mechanic, as a general thing, is better off than the farmer. Don't think that farmers live in any better buildings than formerly, say for the last twenty years. Of course they have better farming implements than formerly, as great improvement has been made in them within a few years. Should not think they had any more money at interest, generally, than they had ten years ago. Do not work any harder than formerly; not as economical.

3. Think that seven-tenths of the sons leave the farm for the shop, city, west, etc. One-fifth of the farms have been abandoned as cultivated farms, buildings vacated, many torn down. The farms that have been abandoned are mostly in the outskirts of the town. People who lived there could not have the advantages that they would like to have, such as schools, stores, post-office, etc. The roads are blocked up with snow in the winter, the boys all gone where they could do better than to stay at home, so that the parents were obliged to leave the old farm, move to the village, or go the city, or far distant west to live with one of their children.

4. No it is not, but they have got the farms on their hands; some of them are taking care of aged parents who would not be willing to leave the old homestead, the place of their birth. When the aged ones are gone then the next generation takes their place, and they, too, do not want to leave the old place. Our farmers are well aware that farming does not pay.

5. Farms are appraised higher than any other property. Selectmen can appraise a farm nearer its value than they can other property, generally. The property of manufacturers, traders, etc., is not generally appraised as high as that of the farmer, because farmers tell the truth and cannot keep their property out of sight.

6. D. H. Goodell and George A. Cochran own pure blood Durham. Prices of stock higher than formerly. No disease. Cattle

have decreased one-half in number within six years, from sixteen hundred to about eight hundred.

7. No stock horse is owned in town. Nine-tenths of the horses had the horse disease last fall. None died.

8. No real sheep breeders in town. Sheep pay better than other stock, generally. They have not suffered much by disease, where they have been properly cared for. Sixty-three dogs are taxed in town. Sheep killed by dogs for the last ten years will average about twenty dollars each year.

9. Should think that one-fourth or more is covered with wood, three-fourths of that old growth. Do not think that the wood is increasing or diminishing much. Some of the lumber is manufactured in town into bedsteads, the remainder is mostly exported. Hemlock, birch, maple, ash, some red oak and white pine are the most abundant.

10. The leading crops are hay, corn, oats and potatoes, beef cattle and butter, if the two last are farm crops; I think they are. Some use phosphates to advantage, and plaster.

11. Apples, pears, plums, cherries, grapes, currants and a few peaches and quinces are raised in town.

12. Farmers generally find all the help that they want, if they are willing to pay the prices asked; but when young men can get \$1.50 or \$2.00 per day for ten hours work in the shop, they will not work on the farm for higher wages if they can get it, for they will have to work from twelve to fourteen hours per day. No farmer can afford to pay the prices for help that he has to pay unless he has some other source of income beside the farm.

Our farmers cultivate too much land. Who can blame the sons for leaving the farm. Let them strike out into the world and make themselves known, not stay at home burrowed up on the old farm because their father did.

BEDFORD.

No formal report; the following items are well substantiated:

1. But few farmers, solely by farming, are making more than enough to support their families, and make proper improvements on their land and buildings.

2. The Bedford farms, which are well cultivated, pay five or six per cent. on the capital invested. The great interests of the town are milk and market-gardening. It is estimated that

\$85,000 per year is realized from the sale of milk. There are few towns in the State in which the farmers are more prosperous, as is indicated by the general appearance of the buildings, the intelligence of the people, and the amount of money in savings banks.

3. Young people stay at home, generally, because they can make farming pay.

4. They have full confidence in the power of the soil, to compensate the farmer for his labor.

5. Bedford farmers do not complain of taxes. They can generally afford to pay their proportion.

6. There is but little pure blood stock in the town, but considerable mixed stock. The Bedford cows are of a superior character. No disease.

7. There is some Abdallah stock in town. A large majority of horses were affected by the disease last fall. Loss, small. All right now.

8. Not a sheep-breeding town.

9. The wood has been greatly reduced during the past ten years, though a fourth part of the area is now covered with a growth.

10. Vegetables, hay, corn, potatoes and the grains, are the leading crops.

11. Fruit is abundant, especially apples.

12. Not many Bedford people hire much; all are workers, and prefer to work than have strangers about them.

BENNINGTON.

[Reported by the Selectmen.]

1. We did not find one man that would own he was making money solely by farming.

2. No per cent. is paid on farm capital. Farmers do not live in so good houses and have not so much money at interest as mechanics.

3. More than nine-tenths of our young men leave the farm for shops and other business.

4. They still continue to leave.

5. Farmers' property is appraised twenty per cent higher than village property, in spite of law and our best efforts to the contrary.

6. There is less neat stock in town than formerly. No disease.

7. No stock horses in town. Nearly all horses had the prevailing disease last fall, but were not injured.

8. There is but one good flock of sheep in town — numbers seventy and owned by John C. Dodge. Paid for sheep killed by dogs, ten dollars. Number of dogs taxed, thirty-five.

9. About one-fourth of the town is in wood; one-tenth heavily wooded. This is diminishing. The timber is generally pine.

10. Corn, rye and oats.

11. Apples.

12. Not a full supply of help of any kind.

BROOKLINE.

{Reported by E. F. Hall.}

1. I think there are no farmers who make money by farming, some get a living from their farms, most of them get their spending money in other ways. The farms, as a general thing, are not very productive, the soil being rather light.

2. The per cent. farm capital pays is very small, if any. The buildings in which farmers live, I think, are rather better than formerly, and farmers are more intelligent; they show this by their buildings, and by using labor-saving machines. No more money at interest than formerly, unless it may be where the interest goes the wrong way, paying out instead of receiving. The hard work and economy stand about the same as formerly.

3. Think about ninety-nine out of the hundred leave the farm for the shop and other pursuits, and presume the other would like to if he was not tied to the good old homestead. They can get more money in ten hours and not work as hard than they can to stay on the farm and work twelve or fourteen hours.

4. The fever is not abating, at least as the boys grow up they leave the farm for the shop or elsewhere. The soil will not pay for the labor.

5. Farms stand about on an equality with village property.

6. Neat stock has diminished considerably. The value of stock stands about the same as in former times. No disease has affected neat stock within the past year of any amount.

7. There is but one stock horse, St. Lawrence. About nine-tenths suffered from the horse disease; no fatal cases. Value of horses about the same perhaps, not quite as high.

8. There are but few sheep kept. We noticed one very nice

two-year old, that sheared thirteen pounds last year. No disease, or damage by dogs among the few kept in town the past year. Number of dogs taxed in 1873, forty-four.

9. About one-half of the area of the town is covered with growth. The timber has been cut for cooper's use to a very great extent, and there are but few good lots left, and those would be cleared in a short time if they could be bought of the present owners. The most valuable we have consist of pine, chestnut, oak and maple.

10. The leading crops are hay, corn, potatoes. Lumbering and coopering, also charcoal burning, are the sources of income.

11. We have apples, cranberries and strawberries. Have no means of knowing the average value.

12. Good reliable help is rather scarce. For house help the demand is more than the supply. The girls can get better pay in factories than at housework.

DEERING.

[Reported by the Selectmen.]

1. There are but very few, if any, farmers who are making money and keeping up the value of their farms solely by farming. We know of no one who does, unless it is some few who have a large estate with extensive outlands, which are used entirely for grazing purposes, and these are but very few. They make their money in this way; they had plenty of money to start with, they take a pride in farming, farm well for they have the means, keep a large stock of cattle, and when cattle are low and there is a short crop of hay, they do not sell, but buy feed for them through the winter, and when they get them through the winter the expense is over; their pastures are ready to receive them as soon as the ground is bare; when the time comes round and cattle bring a high price they sell and start anew. Another source of income these few have which others have not; possessing a large amount of pasturing, more than what is sufficient for the stock they winter, they scour the country, buy cattle in the spring to stock their pastures to make beef, which generally yields them a handsome profit. But were we to enter into a computation of the business and farming transactions of these few we have in our mind, and who have moved within the sphere of our observations

for some years past, we hardly know which side of the sheet to place the balance, whether it would be debit or credit. Their capital invested is large, consequently having a large income, with ordinary family expenses, they annually save quite a sum of money. Generally speaking we say there is none, with the foregoing exceptions, who are keeping up the value of their farms and making money. Why? First, the rates of money are so high that no farmer with ordinary means can engage in any enterprise or expand his business in any way beyond his immediate income. Secondly, the high price of labor compels the farmer to do what he can and leave the rest undone, for no ordinary farm business will pay forty dollars per month. We can better illustrate this by a single example within our own knowledge. Farmer A. has a farm of one hundred acres, and is regarded by all to be an industrious, practical man. Let his financial statement of his farming operations for the past year (which certainly cannot be considered less than an average) speak for himself and farmers generally in our town :

Receipt from dairy	\$125 50
Receipt from neat stock	205 00
Receipt from poultry and swine	65 80
Receipt from orchard	25 00
Receipt from sundries	31 64
	\$452 94

EXPENDITURES.

Labor of one man eight months	\$200 00
Clothing and other store bills	125 96
Blacksmithing and repairs	50 75
Taxes	51 41
	\$428 12
Balance in favor of farm	\$24 82

The products of the farm unsold are consumed on the farm. With the same amount in number of stock as last year and about the same size and quality, it will be seen that Mr. A. made \$24.82. But if we deduct the interest on the capital invested, \$2500, at six per cent., \$150, we find that Mr. A. has gone back \$125.18. Mr. A. has a word more to say. He has sold from his farm the past year \$268 worth of wood, bark and lumber, which leaves a balance in favor of Mr. A. of \$142.82. It will readily be seen

that Mr. A. is not \$192 richer but has reduced the value of his farm more than that amount. We think that this statement may be taken as a fair sample of the farmers generally of the town, except some are compelled to sell some of their hay instead of lumber. Another thing which operates heavily upon the farmer is the enormous taxes he has to pay. The farmer cannot hide away and cover up one-half of his valuation, but has to pay tax a little rising three per cent. upon every dollar. It is discouraging to many and they seem determined to skin their farms, get what money they can out of them, and let them go to the highest bidder, and store away the money and hide it from taxation. The most damaging thing that was ever done to the farming interest was the issuing of government bonds exempt from taxation, and in this State exempting from taxation all money deposited in savings banks, and taxing the banks only one per cent., while the farmer has to pay over three per cent. No farmer will invest his money in costly buildings and improvements on his farm when he knows that for every dollar he puts in he has got to pay three per cent. tax upon it, and receive not over two per cent. income, one less than the taxes, when he can put it into government bonds or into a savings bank and receive seven or eight per cent. and no taxes to pay.

2. From the best information we can obtain, farm capital does not pay anything in this town. But let us see if we can demonstrate this. Take, for example, the case above cited: Mr. A. has a family, but we will reduce it to man and wife and hired man, and rub out the store bills entirely, and add to the amount of receipts fifty dollars more to defray the expense of the two children, and we have for receipts, \$502.94; expenditures, \$302.16; balance of receipts, \$200.78. A man's labor is worth a dollar a day for three hundred days in a year, and board, and the woman one hundred and fifty dollars for the year, making in all, four hundred and fifty dollars. And the farm fails to pay for the labor to carry it on in the sum of \$249.22, unless the value of the farm is reduced by the sale of wood and lumber to make up for the deficiency. As it is said every generation grows wiser, we suppose, if the saying be true, our farmers are more intelligent and better informed, as they possess greater facilities for gaining information. We think they live in no better houses, but they have more conveniences and luxuries, and perhaps more money at interest, but less real value. The main object with our farmers

seems to be to turn everything into money, and get it beyond the reach of assessors.

3. In going through town you will not find one son in ten who has become of age within the last ten years, who remains on the homestead. There are in town at the present time one hundred and fifty-eight farm houses and farms, twenty-nine of which have been vacated within the past ten years. The causes are as above stated. Men who have six or seven thousand dollars invested in real estate and stock, subject to two and one-half or three per cent. taxation, find that seven and three-tenths per cent. on the money, and one dollar and fifty cents or two dollars a day and no taxes, pays better than farming. Consequently they have stripped their farms of what was valuable, sold off their stock and hay, reduced them almost to barrenness, sold them for what they would bring, and have gone where fairer prospects lured them. The effect upon the prosperity of the town is very evident. It increases the burdens of the town in various ways. We have the same roads and bridges to keep in repair, the same other incidental expenses, and only about two-thirds of the means in property and men that we had fifteen years ago.

4. No favorable symptoms as yet.

5. It has been the custom to appraise real and personal estate at what was considered its cash value, but as a general thing, it has been too high, especially in real estate. Some cases which have come under our observation, clearly demonstrated this. Two adjoining farms were sold at auction lately, under very favorable circumstances. One was invoiced at four thousand and was sold at two thousand six hundred dollars, the other invoiced at two thousand six hundred, and the best bid was two thousand.

6. No blood stock unless Ira S. Appleton has the Durham, but the most of his are a grade. Full one-third less neat stock than there was in 1861. Value of animals less than formerly, by at least one-fourth per cent. No diseases have affected neat stock during the past year.

7. No stock horses are owned in town. All horses, with one or two exceptions, were affected by the disease. No fatal cases, and as a general thing, none were seriously affected. Have not depreciated in value.

8. Robert P. Cressy and Freeman Dow are the only farmers in town who keep any considerable number of sheep, which are the Merino. They think it pays better than other stock. Have

not suffered by disease. Forty-eight dogs taxed in town. No sheep reported killed by dogs.

9. Estimated one-tenth of the area is wood, probably one-half is under twenty years of age: amount of wood and lumber diminishing very fast; none manufactured of any account; mostly exported; valuable varieties, red oak, white ash, brown ash, rock maple, white maple, black, white, and yellow birch, hemlock, spruce, pine, poplar, etc.

10. Hay, wheat, barley, oats, Indian corn, and potatoes. Stock raising is the principal source of profit. The crops raised, with the exception of hay and potatoes, are consumed on the farm. The making of butter and cheese is carried on to a very limited extent, and a small profit. Raising of fruit, manufacturing of cider, making maple sugar, etc.

11. Apples, pears, plums, and all kinds of berries. Value we are unable to state.

12. For farm and farm house labor, the demand is beyond the supply. During the haying season, farmers are unable to get sufficient help to properly secure their crops of grass and make it into hay. We would suggest, as an important requisite to the success of the farmers, — by proper legislation place him upon an equality before the law with the conductors of other branches of industry, equalize taxation, make the man who has his thousands in Government Bonds, pay a tax equal to the man who has the same amount invested in the farm establishment. repeal the law exempting from taxation all who may have their money deposited in savings banks, and require the banks to return the names and amount of deposits to the towns in which they reside. Then when people find that they cannot escape taxes through Government Bonds and savings banks, farmers can hire money at reasonable rates of interest, which will enable the enterprising farmer to expand his energies with success. But so long as every dollar of money which can be gleaned from the robbery of our farms and carried to the banks, and by the banks to build cities and railroads in the far West, and all the burdens of public taxes fall upon those who cultivate the soil, just so long will the occupation of the farmer here in New Hampshire, be at a discount.

FRANCESTOWN.

[Reported by George F. Pettee.]

1. None that I know are making money. Low price of produce and high price of help the reason.

2. Small per cent. is paid by farm capital. Better conveniences, not so much interest money. No particular change except that farmers are more intelligent than formerly.

3. From one-half to two-thirds leave to live easier and make more money.

4. No radical change to my knowledge.

5. We appraise farms at their real value. Have no experience in city appraisal; being all fresh at the business and supposing law to mean something, we have appraised pretty close to the cash value.

6. H. and G. H. Richardson have Hereford stock; M. H. Balch, Durham; A. H. Bixby, Jersey. The amount is greater than for any one year for the last five years since. No disease.

7. John West has the stock Abdallah. Seven-eighths of the horses suffered. One to one hundred died. No depreciation.

8. W. A. Lord, John G. Morse, K. W. Emerson, J. C. Follansbee, E. A. Wilson have Merino sheep. Forty-five. Average fifty dollars a year damage done by dogs.

9. One-third to one-half of area covered with wood, which is diminishing. Kits, pails, fancy boxes, bureaus, are made. Pine, hemlock and spruce; oak, beech and maple are the leading varieties.

10. Grass, corn, potatoes, wheat and oats are the leading crops.

11. All kinds common to the section. Could't tell the amount.

12. The demand for labor is good, but the labor is not of the right kind.

GOFFSTOWN.

[Reported by the Selectmen.]

1. Like all other towns we have of course a large number of poor farmers. It is also true that we have many good ones. Messrs. Joseph J. Poor, Charles W. Cheney, H. Tirrell, S. M. Barnard, A. J. Hazen, Daniel Shirley, J. A. Flanders, H. S. Hoyt and some others, are making money by business connected entirely with farming interests. The sale of milk is perhaps the most

remunerative part of their pursuits. Those living in the immediate vicinity of Manchester are doing well by market gardening. These sources, with perhaps the apple crop, are the principal ones upon which our farmers can depend.

2. After a careful consideration of the question, and estimating the town as a whole with the improvements of the farm and farm buildings and the growth of the forests, together with the annual products of the same, there would be but a small amount above the expenditures. Probably not above two per cent. Farmers, as a body, are perhaps more intelligent. They live in better buildings and have more luxuries than formerly. Many have money at interest. Take the year through they work harder and do not live as economically as their ancestors.

3. Most of the young men, on attaining their majority and many before, leave their homes as they believe they can do better elsewhere. Three out of every four will do so and possibly the percentage may be larger. Perhaps thirty farms have been abandoned or joined with others in the time specified.

4. Your question is "Is the fever abating?" That is difficult of solution, but with the maxim of the physician we will say, "while there is life there is hope."

5. We have appraised the property of the town at or near its cash value as we understood the law in relation thereto, with no discrimination in favor of either the farming or the manufacturing interest.

6. There are but very few pure grades of cattle in town, most of them being mixed more or less with native. There are a few Jerseys, Devons and Durhams, so called, but probably would not stand a very strict test as to their pedigree.

7. In relation to blood horses it is needless to remark. The reputation of D. M. Taggart's "Abdallah" and his stock for speed and endurance is well known. Probably ninety-nine of every hundred were afflicted more or less with the epizootic. One in about thirty died, the rest apparently recovered. This spring many of the horses are troubled more or less, but whether it is the lingering remnants of the disease or ordinary coughs and colds, a few months will determine. A return to grass will undoubtedly be a benefit.

8. There are no extensive sheep raisers in town. We found at J. G. Carr's a flock of forty-four. The balance are mostly cossets, ranging from one to ten on a farm. The sheep are mostly a cross

of South Downs and natives with a few Cotswolds or Leicesters. They seem to pay a better profit than any other stock. No disease has appeared among them this year. The number of dogs taxed is ninety-four. The value of killed or maimed sheep the past year about \$50.

9. About one-third part of the area of the town is covered by a growth of some kind. There is in the vicinity of fifteen hundred acres of heavily timbered land but the amount is diminishing rapidly. Most of the pine is manufactured in town into sash or blinds. Chestnut, pine, hemlock and oak are the principal varieties.

10. Corn, potatoes, oats and hay are the leading products. These with the sale of milk constitute the chief sources of revenue to the farms.

11. Apples, pears and peaches are the fruits, to which we may add much wild fruit. The amount of their valuation is difficult to estimate, perhaps \$15,000 is a high estimate, although there are many good orchards.

12. The supply of good farm help is entirely inadequate to the demand, either of male or female. Our sons and daughters will not stay on the old homestead when they can do better elsewhere. Consequently our best help, those that would help to elevate the profession by bringing to its aid new and practical ideas and new energies, leave us to seek places where the labor is lighter and the remuneration greater. Under the present condition of things we cannot consistently expect better results.

The farmers here, as a class, like farmers nearly everywhere, consider themselves oppressed. In a measure they undoubtedly are so. Every acre of land, and each horse or cow, even if it is the farmer's only one, is required by the statutes to be taxed to its full cash value, while a large portion of the wealth of the country is especially protected in that particular. When the farming interest is placed upon an equality with those who now consider themselves their superiors, a new impetus may possibly be given to agricultural pursuits.

GREENFIELD.

[Reported by the Selectmen.]

1. There are, we think, perhaps a dozen farmers saving each year from \$200 to \$500; in most instances these are farmers having their sons to help them so that they have no money to pay out except for taxes and the wear and tear of implements, etc.; in most cases these farms are rather going backward than improving in fertility and productiveness.

2. The farmers are making less than one per cent., estimating cost of labor, taxes, wear and tear of implements, etc. In regard to farm incomes we made no inquiry on going round to take the appraisal, but after paying taxes and other expenses a large proportion of farmers save less than \$100, and some we believe will show a deficiency to foot all bills through the year. In regard to the intelligence of the farming community, it is perhaps full up to the average standard for the last twenty years; the buildings now occupied also, we think, are rather better than they were ten or twenty years ago; this we think is partly owing to many of our oldest and back farms being deserted, and the union of two or more farms in one, so that the buildings on one have been improved and on the other taken down or sold to other parties. We think the farmers in this town have more money at interest than formerly; this we think is owing to the permanence of our farming population; this interest money is owned by our older farmers who have spent long lives at hard labor, increasing the area of their land from time to time, and who have had large families to assist them. The farmer we think never worked harder and was more economical than at the present time.

3. We think for the last ten years four-fifths of the farmers' sons leave the farms for trades and other occupations. The proportion of farms abandoned or united to other farms within ten years, we think one in twenty, perhaps more than that.

4. We have not noticed any particular fever to get off the farm, this, more than for the last ten years, but there is an almost universal complaining on the part of farmers in relation to the new law passed at our last Legislature, requiring the selectmen to make a new appraisal of farms and all property at its full value, they believing that taxes will bear more heavily than formerly because there is so much property hid away or exempted from taxation.

5. There has not been a general appraisal of the farms in town for more than thirty years, except some changes upon the improvement of buildings or the non-occupation of farms, etc. We think that the farms are taxed more than double in proportion to their actual income as compared with that of merchandize, stocks or manufacturing interests. Owing to the long time since our farms were appraised many of them stand on our tax books to-day at more than they will bring at auction, while some stand far below. To remedy this we are going to make a new and thorough appraisal of all property in town this fall. Our property in town will be changed considerably owing to the railroads being completed from Wilton to this place the present season. There are no manufacturing interests except a steam-mill, which is as usual now-a-days exempt from taxation for a time. We have one store in town. We taxed the money invested at about one-half its value. We don't think there has been any discrimination for or against the farmer by our appraisers.

6. There is no pure blood neat stock in town. We think the value of our stock in town not materially different from what it has been for the last ten years. There has not been any prevailing epidemic or disease among our stock within the last ten years.

7. There are no stock horses of value in town. There were, perhaps, one-fifth of the horses affected with the horse distemper last fall, none of which proved fatal. The horses thus affected appear to have fully recovered from the disease.

8. Nahum Russell, Zebadiah Peavey, Robert Blanchard, Levi S. Holt, John Fletcher, Joseph Blanchard, are our leading sheep breeders. There are quite a number of South Downs, and of the native breed. By taking advantage of the wool market keeping a flock of sheep when wool is high and other stock when the market is more unfavorable, we think our farmers who have suitable pasturing make well by keeping sheep. There has not been any epidemic in town for a few years. Number of dogs taxed in town, eighty-six. The value of sheep killed or maimed by dogs is from twenty to fifty dollars.

9. The proportion of the area of the town covered with forests is perhaps one-fourth. There is but little wood land in town of twenty years growth, but perhaps nearly one-half the area of a second growth as compared to our older forests. We think the amount of wood and timber in town is on the decrease, perhaps five or ten per cent. within the last ten or fifteen years. The

lumber is almost entirely exported. The principal varieties of wood of value for timber are pine and hemlock, with some spruce, oak, ash and basswood. We have no special varieties of wood in our place.

10. The leading farm crops in town are corn, wheat, barley and potatoes. There are no special sources of income to the farmer except what he obtains by tilling the soil and stock raising. There are a few good sugar orchards, perhaps four, that produce from five hundred to eight hundred pounds of sugar, and other small lots producing from two hundred to four hundred pounds, perhaps the whole amounting to nearly four thousand pounds annually.

11. In some sections of our town there are some apples raised, the average value of which, in our opinion, amounting to from \$500 to \$800, annually, that is sold and exported to other places, the whole value amounting to \$2,000. No other fruit raised in town except for home use.

12. The demand for farm labor is somewhat above the supply, but wages are so high that farmers cannot hire except what their most pressing needs require; are more in need of men's help than that of women.

One of the most pressing needs of the farmer is some cheap fertilizer that can be used to some advantage to the farmer instead of the profit all going into the hands of capitalists, as is the case with the phosphates, etc., that are offered to the farmer at the present; another is to be placed on the same footing as capitalists in regard to taxation.

GREENVILLE.

A report was sent us, we are informed, from the selectmen of this town, but it never reached the Secretary's office, consequently none appears.

HILLSBOROUGH.

[Reported by Edgar Hazen.]

1. Farmers are not making money because the interest on the capital invested, the taxes and the expense of labor in cultivating the same will, in my belief, more than balance the whole income of any farm in this town.

2. Per cent. farm capital pays, I should estimate, the cost of labor including board, at \$2.00 per day. Our taxes for several

years have averaged two per cent. with a debt of \$23,000 at the present time. I think the farmer does not stand upon equal footing with the merchant or the mechanic. We have to pay them their prices for their goods whether high or low and we are obliged to submit to their prices for what we have to sell. Dealers in beef, pork, wool, potatoes, butter, apples, etc., come to the farmer and offer their prices, which he must accept to raise money to pay his taxes and other incidental bills which daily occur. As regards money at interest the farmers of Hillsborough give in much less for taxation than they did ten or more years ago, and the appearances are that the farmers are not keeping up with the merchants and manufacturers of the town.

3. I judge that seven-eighths of the farmers' sons leave the farm for trades and other occupations, or go west. There have been some fifteen or more farms abandoned within the last ten years. Causes, a part on account of location, lack of interest, etc.

4. I think there are more farmers wanting to sell their farms than I ever knew before.

5. Real estate, as it now stands for assessment, is at about three-fifths of what would be asked of a purchaser. Farms stand higher in proportion than village property. Personal property of farmers is rated higher than merchandise or manufacturing interest. We have rated horses, cattle and sheep at from two-thirds to three-fourths of what they could possibly be sold for (cash value.) I think there has been no discrimination between farmers' property and others, but the merchants and manufacturers will manage to give in their property at very low figures compared to what they really have during the year.

6. There are not many pure blood animals kept in town; several grades of Durhams, Devons and some Jerseys.

7. L. A. Brown, F. W. Gould and Gardner Chase each own stallions of considerable repute. Brown's are of the Abdallah blood, Chase's the Morrill, Gould's the Morgan. I think nine-tenths of the horses in town had the disease last fall. Not over one per cent proved fatal. Those that recovered seem as well as before having the disease.

8. There are no very extensive sheep breeders in town. The breeds kept are mostly native and South Downs. Sheep have not suffered much by disease. The tax on hogs this spring amounts to \$143. The value of sheep killed by dogs in town I think will amount to from \$75 to \$100 annually.

9. What part of the town is covered with forests? Cannot say what proportion of the same is old or new. There is considerable lumber manufactured in town. Bedsteads, shovels and spade handles, etc. Also a large amount sawed into building materials and shipped out of town. The lumber is composed of pine, hemlock, spruce, oak, ash, maple, beech, basswood and birch.

10. The leading farm crops are corn, wheat, potatoes, oats, barley, apples and hay. The principal income of the farmers in Hillsborough are the growth of stock, the dairy and wool.

11. The varieties of fruit consist of apples, pears, plums, peaches, cranberries, grapes, etc. Average value (cannot say) impossible to estimate.

12. There is no great demand for farm or farm-house labor in this town. There has generally been a fair supply of laboring men, but women's help to perform house work is hard to find, there are frequent inquiries made for girls to do house-work, without success.

HOLLIS.

[Statement made by Mr. Woods.]

1. Farming pays in Hollis. It is a good town.

2. Don't know what per cent., but there are no farms for sale and their owners seem satisfied.

3. Boys stand by the old homestead better than in neighboring towns.

5. Taxes are low, only sixty-eight cents on one hundred dollars; no debts, the town above board.

6. Some Devon stock, and many excellent cows. No disease.

7. The horse disease was general, but no animals died. They are not quite as good as before the disease.

8. Few sheep in town, but they pay well.

9. One-fourth of the town is covered with wood. There is much coopering done in town.

10. Grass and the common crops only are grown.

11. Apples are plenty.

12. Labor for farm work is not scarce.

HUDSON.

[Reported by Kimball Webster.]

1. David Clement, Jr., has a large farm that produces apples and hay to considerable extent, which pay a good profit; he also raises early potatoes for market and keeps a good stock of cattle and sheep. Samuel Morrison has the largest apple orchard in town. William F. Winn raises cabbages, melons and early vegetables for the Nashua market. Talford D. Melvin, apples, corn and potatoes. Charles W. Spalding, J. K. Wheeler, Hiram Marsh, Lucien M. Tolles, all raise a large amount of milk which finds a ready market in Nashua. Reuben Spalding, apples and a variety of other products. H. A. Marshall, early and late vegetables for market.

2. Basing our conclusions upon the rental value of farms we think from five to six per cent. is realized upon farm investments. Farmers are more intelligent than formerly and live in better buildings, have more conveniences and luxuries, more money at interest, do not work so hard, and are more extravagant than formerly.

3. About fifty per cent., we think, of farmers' sons leave the farm for other pursuits. There are as many farms in town now as there were ten years ago. A few have been abandoned, and some united with other farms, and some have been divided into smaller ones. The cause of young men leaving the farm is that they have the opinion that they can make more money with less labor in some other business. With many this is probably a mistake, with some otherwise.

4. Farmers are no more inclined to leave the farm this spring than heretofore. A large proportion have a confidence in the soil such as they cannot have in any other direction.

5. In regard to taxation there has been no discrimination for or against the farmer, certainly not against him. Real estate has been appraised considerably below its cost value.

6. No pure blood neat stock in town. There is less neat stock in town than formerly. Value per animal more by twenty-five per cent. No disease.

7. No blooded horses. About ninety per cent. of the horses had the disease. Only one or two fatal cases. Many of those that recovered have since had a cough, and still have it to a

greater or less extent, and some cough badly. We think but few have depreciated in value from that cause.

8. There are only one hundred and sixty sheep in town this spring. Joseph Fuller has a flock of twenty-three sheep of common or mixed breed, John Chase has eleven, William F. Chase nine and Samuel Gowing ten, all common sheep. The balance are in small lots of from one to ten. They think sheep pay better than stock. They have not suffered by disease to our knowledge. Eighty-seven dogs are taxed this year. The average value of sheep killed by dogs is about fifty dollars.

9. About fifty per cent. of the area of the town is covered with forest, and about fifty per cent. of that is over twenty years' growth, and fifty per cent. new growth. The area of wood and timber lands is increasing at the rate of perhaps five per cent. in ten years, but the value is decreasing at the rate of ten per cent. for the same time. There is but little of the lumber manufactured in town, a great part is floated down the Merrimack to Lowell, and large quantities are manufactured into boxes and building material in Nashua. White pine, white and red oak, and some ash and walnut are the valuable varieties for timber. There is also a large amount of hard pine, principally used for wood in Nashua, and exported to the brick yards near Boston. No special varieties. The decrease in value of wood and timber is owing to large quantities being cut annually.

10. The leading farm crops are hay, potatoes, corn, oats, rye, with some buckwheat and beans. No new practices adopted that are not common to other towns. The farm crops, wood and timber (which are near market), milk, butter, eggs and poultry afford the principal sources of income to the farmer. There is a large amount of hay sold and a considerable amount of beef is raised in town, and some more pork than is used for home consumption. Wood and timber, however, afford the greatest source of income to many farmers.

11. Apples are the leading fruit, also a few peaches, pears, cherries, grapes and currants are raised. Strawberries are also grown to considerable extent. Huckleberries and blueberries are picked and sold in considerable quantities. The average amount of the fruit crop is from seven to ten thousand dollars.

12. There is an increasing demand for good farm and farm-house labor, both men and women, and there is not an adequate supply. Poor help plenty.

LYNDEBOROUGH.

{Reported by Luther Cram.}

Your letter asking why our Selectmen had not sent in their report is received; the reason they give for not doing it is they did not feel able to give information of value, but have finally delegated Leonard G. Brown to do it; you have, or will receive a report from him. As Mr. Brown has been over town and among our farmers less than almost any other man they could have found, I will give you my ideas of the answers to your questions of which you can make such use as you think proper.

1. I think there are but very few farmers making money by farming, solely. The selling of milk, and the raising of fruit appears to be the best business. The reason so little money is made is the want of more capital, and the high price of labor.

2. As a general rule money invested in farms does not pay a per cent. Farm buildings have improved somewhat, and there are more conveniences in and about the buildings. In regard to the intelligence, hard work and economy of farmers, can see no difference.

3. Five-sixths of the sons of farmers leave the farm for trades, commercial pursuits and other occupations. The cause — better pay anticipated. Do not think any farms have been abandoned in the last ten years, but previous to that time a large number.

4. Farmers are no more or less inclined to leave the farm than formerly, some would sell out if possible, while a few are confident that the soil may be improved and something made by farming yet.

5. We have no city or village residences to appraise. Farmers' lands, stocks, etc., are appraised higher than merchandise, or manufacturing interests. Farms and farm stock are appraised at about what they would sell for cash, all the same day, which, I suppose, is about sixty per cent. of what they would bring as usually sold.

6. There is no pure blood neat stock in town. There is less stock than formerly by at least one-third; and per animal the price has doubled within the last twenty years.

7. Luther Cram owns a stock horse, Wakefield, a rich, mahogany bay, with black points, six years old, fifteen and a half hands high, weighs one thousand pounds; he possesses the blood of the well-bred Morgan with an infusion of thorough-bred blood

through Bashaw and Jackson through the Clays, also Messenger blood through his granddam, and the blood of the imported Diomed through Duroc by his dam. Horses nearly all had the horse disease last fall, although the writer had six, all of which escaped. There were no fatal cases, and it does not appear that any have depreciated in value.

8. There are but few sheep in town, and twenty-five dollars worth are annually destroyed by dogs. From thirty-five to forty dogs are taxed annually.

9. There are no old growth forests. Think one-fourth the area of the town covered with wood, one-half of that under twenty-five years old. The principal lumber is pine and hemlock which is sawed into boards and exported.

10. The leading farm crops are hay, corn and potatoes. The sources of income are lumbering, cord wood, the sale of milk, butter, fruit, berries, with a few cattle and horses.

11. Apples, pears, peaches and grapes are raised for the market; am not able to state the amount.

12. There is more demand than supply.

The success of the farmer seems to depend entirely upon a greater supply of help at a lower price, or a better price for his crops.

[Second Report, by L. C. Brown.]

1. Farmers that are engaged in selling milk, wood and lumber, and those that have good fruit farms, are making money. Others do not make anything aside from a good living. The reason is this, they do not know how to make money from the hard, rocky soil.

2. Taking the per cent. of farm capital, as a whole, it pays but little, if anything. But farmers live in better buildings, have more conveniences, and are better educated. Farmers have considerable money at interest, made by selling wood and lumber. Farmers are naturally inclined to put their money at interest more than to making improvements on the farm with their surplus money.

3. I think that five-sixths of our young men leave the farm, go West or into other business. The other sixth are inclined to stay at home because they love their native place and think that money can be made from the soil.

4. No; almost all will make a change if they can make money thereby.

5. I think farmers have to pay more than their proportion of taxes, because their property is easier seen than some other. I think appraisers try to tax all alike.

6. No pure blood neat stock in town. Stock about one-third less; value about doubled. No disease.

7. Luther Cram owns a stock horse "Wakefield." Nearly all the horses in town suffered from the horse disease. No fatal cases. One farmer had six horses which did not have the disease. The horses have not depreciated in value, and for work, they are in as good condition as they were a year ago.

8. John Deliver has forty sheep; but a few kept in town. From thirty-five to forty dogs taxed yearly. About twenty-five dollars damage paid yearly for sheep killed by dogs. Tax on dogs ought to be doubled.

9. One-third of the area of the town is in wood; nearly all new growth. The wood and timber is diminishing faster than it grows. The lumber is sawed in town and exported. Most of the wood is sold out of town. There is a glass factory in town which consumes a large amount of wood, and the railroad, when completed, will want wood. The trees, for wood, are birch, beech and maple; for timber, pine, chestnut, hemlock, spruce and oak.

10. The leading farm crops are hay, corn, potatoes and apples; oats, barley and wheat raised in small quantities. Fruit, milk and butter, native blueberries and blackberries, are a source of income. The two last articles on many farms give more income than the cattle that are kept on the farms. One farmer, last season, sold at his door three hundred dollars' worth of blueberries. From other farms, berries are sold yearly to the amount of fifty dollars and upward.

11. Apples, peaches, pears, grapes, currants, strawberries and gooseberries; native fruits, blackberries, blueberries and partridge plums. The average value I cannot tell. C. H. Holt has a nursery, and sells from two to three thousand dollars' worth of trees and vines, yearly; he sells from one thousand to fifteen hundred dollars' worth of fruit, yearly, about half of this amount being for grapes. There are good fruit farms in this town, farms that are producing from fifty to three hundred dollars' worth of fruit yearly. But the value of these farms might be doubled in a few years, by good management.

12. The supply is not equal to the demand. Last season the crops suffered, because the farmer could not get help.

MANCHESTER.

[Items collected by the Secretary.]

The few farmers in the suburbs of the city who study to make the most of their farms, are making money. Much of the available land, though light, near the city, is paying for the labor expended upon it, the improvements made and a fair interest on the capital invested. Many of the small farms pay better than the business of mechanics. The most valuable farms are those in the neighborhood of the Reform School, Daniel Farmer in Ward 8, John K. McQuesten in Ward 7, the City Farm, Isaac Huse's, John Calif's, and others in close proximity, in Ward 6.

Most young people prefer the shop, the mill, professional or mercantile life, and early leave the farm, so that many farms are not cultivated as thoroughly as first class farmers would like to see them.

The farmers of Manchester do not complain of unjust taxation. It is generally believed that they are favored rather than oppressed by the system of taxation. The appraisal of property in the city is low, much too low, making a high per cent. of taxation — this year twenty-five dollars on a thousand, or two and a half per cent. An increase in valuation from twelve millions to fifteen might be fairly made and thus affect a corresponding reduction in the rate per cent.

There is considerable valuable neat stock in the city, of the various imported breeds, mostly milch cows. No disease has prevailed among them. Horses are yearly increasing in number and in value. A large proportion of the equines had the epizootic, but are now supposed to be as capable of hard work as they were a year ago. Not more than one in one hundred died. There are very few sheep, about fifty, but dogs by the hundred. Something like \$25 a year has recently been paid for sheep killed and injured by dogs. The income from dog tax and license has been nearly one thousand dollars. The number of dogs taxed in 1871, was 562; in 1872, 602; in 1873, 698. A city license, in cost equal to State tax, is required.

A few years ago nearly one half the territory of Manchester was covered with wood, which has rapidly disappeared, leaving little old growth, but many acres of sprout land. Nearly all the lumber has been worked up at home, with hundreds of tons and hundreds of thousands of feet brought in from all sections.

The farm crops are grass, corn, potatoes and garden vegetables.

Fruit is generally plenty, including apples, pears, and all the small fruits, and a great abundance of wild fruit.

Labor of first quality is high and seldom found for farm work, and woman's aid of an intelligent character will command almost fabulous prices. To give a correct idea of the valuation of property we copy the following from the assessors' books :

	1871.	1872.	1873.
Valuation of Real Estate	\$7,143,178	\$6,573,652 *	\$6,942,110
Number of Polls	5,404	5,911	6,210
Stock in Trade	\$1,274,700	\$1,212,430	\$1,217,100
Interest Money	50,860	48,300	48,900
Stock in Corporations	251,020	272,120	304,260
Number of Horses	1,163	1,207	1,331
Value of Horses	87,842	89,588	104,298
No. of Neat Stock	720	649	587
Value of Neat Stock	\$22,970	19,730	18,492
Value of Carriages	27,170	26,610	32,420
Value of Factories and Machinery	2,692,150	2,708,913	2,712,210
Total Inventory	\$11,356,012	\$11,542,632	\$12,101,000

MASON.

[Reported by James Russell.]

1. I do not know any farmers making money solely by farming.

2. The growth of wood and hoop-poles will, if judiciously managed, pay ten per cent. on the cost of land. Cannot give figures in regard to farm incomes. Farmers have money at interest for the reason that they have converted the older growth into money. As a general thing have fine buildings. Do not think they work harder, or are more economical. Stock growing is not called a paying business here.

3. Probably half the sons of farmers leave the farms for other trades and occupations. Two or three farms have been united to other farms within the last ten years by reason of the buildings

* The reduction from 1871 to 1872, was in consequence of the depreciation of the Manchester Print Works, which the Assessors put at \$1,000,000 less in 1872 than in 1871.

being destroyed by fire. The result is that the value of the property is depreciated fifty per cent. or more.

4. Farmers do not seem to be more uneasy than usual.

5. We appraise property as the law directs, as near as can be ascertained, at its cash value. So far as we know farmers' property has generally been appraised at two-thirds to three-fourths its cash value, and manufacturing and village property from one-fourth to one-half its cash value. The figures can be given if wanted.

6. Joel H. Elliott has some Jersey stock. Nelson L. Barrett gives considerable attention to breeding swine; has a large number of pure and part blood Poland China. Farmers are more careful to keep good stock than formerly. No disease.

7. No stock horses. Nearly all the horses suffered from the epizootic. But very few, one or two, fatal cases. A few are not yet well, otherwise they have not depreciated in value.

8. Very few sheep in town. But forty-five appraised in town. Farmers generally would keep sheep were it not for the damage done by dogs. Those who keep sheep think they pay a larger per cent. than any other stock. The actual damage done by dogs is slight, but the fear of greater damage operates unfavorably to the sheep interest. Fifty-five dogs taxed in town. Value of sheep killed for five years past, \$133.50.

9. Nearly one-third the area of the town is covered with wood or hoop poles. Probably not more than ten per cent. is over twenty years growth. The acreage is increasing, but the amount of wood and timber is decreasing. The lumber is mostly used in Townsend and Brookline for coopering. White pine and chestnut are our best and leading varieties for timber. Gray birch is very valuable for hoops, producing from three to ten thousand hoop poles per acre, biennially, worth from \$2.50 to \$5.00 per thousand standing. The most of them are grown on very poor soil.

10. The leading farm crops are grass, small grains (oats mostly), potatoes and corn. Not much scientific farming. Sources of income named above.

11. Apples, (pears and peaches to a limited extent), grapes and blueberries are our staples; some cranberries raised. Cannot tell the average. One farmer raises from ten to fifteen tons of grapes as he reports. Farmers do not generally regard apples as a remunerative crop. A considerable revenue is derived from blue-

berries, women and children earning from two to four dollars per day, during the berry season of four to six weeks. Many laborers are employed on the stone quarries during the summer months, and some of the farmers work on the ledges a part of the time.

12. The demand is greater than the supply, especially female labor. It is considered more fashionable to work in stores, on railroads, in quarries and factories than on farms at the same wages. The labor question is not easy of solution, but farmers could probably obtain help easier if they could furnish tenements to men with families. In that case the help would probably be mostly foreign.

MERRIMACK.

[Reported by Nelson H. Brown.]

1. There are but few, if any, who are making money solely by farming. The wood and timber of our town has been considerable of an item, being near good markets by rail and rafting down the Merrimack river.

2. Cannot speak definitely. My impression is, judging from manufacturers and mechanics in our vicinity, that they have the inside track. I think farmers' buildings are in better condition than formerly and they ride in better carriages.

3. A large proportion of the boys, should say three-fourths, leave the farm for trades and other pursuits. The proportion of farms that have been left to wood and pasturage entirely is very small, but a great deal of land has been left to grow to wood on many of our farms; the result is that wood is always in good demand, and we have tracts of land that do not pay for farming.

4. Think they are not inclined to leave farming more than formerly.

5. Do not know the valuation of city property well enough to compare the appraisal between them, but are inclined to think that farming property is taxed higher with us, in proportion to the per cent. it pays on the investment, than manufactures.

6. We know of but one man that owns pure blood stock. Ward Parker takes a good deal of interest in neat stock, he owns a herd of Devons that is worth looking at. Less stock this year than last. No disease has affected our stock the past year.

7. None. Nearly all suffered from the disease. None died. We think there has been no real loss.

8. There are but few sheep kept in town. About seventy dogs are taxed this year. The loss on sheep, by dogs, for the last year, was about twenty dollars.

9. Could not tell accurately, should think about one-half. Mostly young growth. The value is decreasing. Most of it is exported. There is some and is to be more manufactured here into staves and barrels.

10. Hay is the leading farm crop; milk is quite an item in some parts of our town.

11. Apples are most of the fruit that we raise.

12. In regard to labor on the farm and in the farm-house, I think the demand is greater than in the manufactures of the town. Young men had rather work in the shop ten or eleven hours a day than on the farm, even for less pay.

MILFORD.

[Reported by George F. Bartlett.]

No response is given to the first and second questions. Milford is a first-class farming town, and a resident of the town, a farmer, says farming pays well, and that capital invested in farming pays full six per cent.

3. Perhaps three-fourths of farmers' sons seek other pursuits. Very few farms are abandoned to pasturing and growth, none but those which are almost out of reasonable access.

4. There seems to be an increasing confidence in agricultural engagements, and less inclination to leave farms for other pursuits.

5. Have endeavored to make our appraisal as near cash value in each class as safe, taking into account liabilities of adverse circumstances under which it might be converted into cash. Farms have heretofore been taxed higher than other property perhaps.

6. C. C. Shaw, has a fine herd of Jersey cattle; Eli Burns some very good Ayrshire stock; both of these bloods are held in higher estimation as they are known and proved. Neat stock has been very free from disease of all kinds.

7. No stock horses of note. Five-sixths of the horses suffered in the horse disease. The fatality among them was very light indeed and the present value is, perhaps, equal to their former value.

8. No sheep breeders of note. Very few sheep kept. About

one hundred dogs. So few sheep are kept that the ravages of dogs must be comparatively small.

9. The old growth is mostly removed, and we think the large area of less than twenty years growth is increasing faster than older is reduced. The lumber is all manufactured here.

10. Grass or hay, oats or straw (it being mostly cut green for fodder,) Indian corn. The production of milk is a leading feature upon many farms.

11. Apples produced to quite an extent; pears, peaches, shrub and vine fruit grown in smaller quantities. Amount unknown.

12. The demand for farm labor is beyond the supply, for farmhouse or female labor is very greatly beyond a possibility of being met at the present. The scarcity and high price of farm labor operates greatly for the discouragement of those engaged in agricultural pursuits.

MONT VERNON.

[Reported by the Selectmen.]

1. None the past year made money. High price of labor and high taxes is the reason.

2. None could give exact figures as to incomes. Farmers as a body are more intelligent, live in better houses and have more conveniences, than formerly. Have less money at interest, and work the same.

3. Three-fourths leave the farm. Fourteen farms abandoned; nine dwelling-houses, two blacksmith's shops and one grist mill, besides the buildings on abandoned farms, are standing idle. Cause, young men leaving.

4. Farmers are as much inclined to leave as ever.

5. Farms assessed full as high as village residences. Formerly, property has been assessed at from two-thirds to three-fourths of its full value. This year it has been raised under the new law, so far as was practicable to examine property.

6. Less neat stock than formerly; value, greater; increase, fifty per cent. No diseases.

7. Seven-eighths had the epizootic; one fatal case; many still show effects of the disease; not so salable.

8. But few sheep are raised; not profitable. Number of dogs, thirty. Value of sheep killed last year, thirty-three dollars.

9. Estimated at one-fourth, one-half of which is under twenty

years' growth. Amount of timber diminishing rapidly; exported; pine, hemlock, chestnut, birch and maple; no special varieties.

10. Corn, potatoes, rye, barley and grass. Sale of milk, fruit, hay, wood and lumber.

11. Apples, pears, peaches, strawberries and blueberries. Three thousand dollars estimated.

12. Good. No adequate supply.

NEW BOSTON.

[Reported by the Selectmen.]

1. None are making money because taxes are so high.

2. Farmers have better buildings than formerly, but not much money at interest.

3. About three-fourths of the sons leave town, which has a bad effect. Wood and timber mostly cut off.

4. About the same as formerly.

5. Think that farms are prized as high as buildings in villages. Hard to tell what cash value is at these times.

6. John N. Dodge, Solomon Dodge, S. T. Burnham, perhaps others, have good Durham stock; there is less than formerly, but more valuable.

7. William Dodge and James MuCardy, "Cassius." Nearly all horses suffered; very few died.

8. Sixty dogs taxed. About thirty dollars paid for damages.

9. One-eighth covered; one-sixth old growth. Lumber and wood are being cut off very fast; piano cases are manufactured.

10. Hay, grain, potatoes, milk, etc., are the principal crops.

11. Most all kinds of fruit, not able to estimate.

12. At the present prices of labor, farming does not pay; wages are very high compared with what the farmer has to sell.

NEW IPSWICH.

[Reported by W. D. Locke.]

1. A limited number are making money solely by farming, and at the same time keeping up the value of their farms and supporting their families. It is principally done by raising milk for market.

2. There are no data on which to give exact figures of farm incomes, for the reason that few keep debit or credit farm

accounts. We can only form opinions by general indications. The merchant has a known value in capital invested and a nominal value in the "good will" of his trade limits. He can annually take account of stock, rents, taxes, interest and book balances, and determine quite accurately his loss or gain. The farmer's capital being in real estate and personal property, embracing tools, live stock, etc., interest, taxes, repairs, wear of tools, cost of help and the like, are so evident, that a true account will show his progress so far; but his "good will" differs from the merchant's, and it is not so easily estimated. It consists in the increasing productiveness of his soil slowly developing, and the growth of wood and timber which he fosters with studious care, items difficult to measure or compare. This part of his success is not so easily estimated. Hence we are left to form opinions by observing the productiveness of his acres and the thrift and blood of his stock, and general outlook. Farmers, as a body, are more intelligent and have more conveniences and luxuries than formerly, and this may be one reason why fewer of them have money at interest. They work fewer hours, physically accomplishing with mind and machinery much that was formerly done by hand labor, yet the enterprising farmer has no idle "rainy days," no loafing evenings. He works hard. On the whole, agricultural investments in or upon the soil are the safest of all investments, and although its *money returns* may be slower than most other professions, yet the live farmer does not labor under any necessary disadvantages compared with merchants or mechanics.

3. At least eight-tenths of farmers' sons leave the farm for other pursuits. Abandoning farms to wood and pasture commenced nearly half a century since in New Ipswich. The proportion for the last ten years has been small compared with previous years. Only a few cases are remembered. The causes, gradual depletion of productions, on a thin and rather wet soil. Population has diminished, and the prosperity of the town has suffered.

4. None. There is more hesitation about leaving—a little more confidence in the soil of New Hampshire, if properly fed and tilled, to meet the necessities of the family. The return of some to their former "sweet home" who "went out to look," has its influence.

5. In the assessment of taxes there is no discrimination made

in favor of or against the farmer. The cash value is the assessor's standard for all classes of property.

6. The Prestons have six pure blood Jerseys, with a number of high grades. Some others claim to have full blood Durhams and Ayrshires. High grades of both are common. The number and value of neat stock is less than ten years ago, and thirty per cent less than forty years since. There is more than that difference in the capacity of pastures to sustain stock. There is forty per cent. less of property held in oxen than formerly. Cows for raising milk for market are more valuable, and by higher feed produce twenty per cent. more milk than twenty years since. No prevalent diseases appeared the past year among neat stock.

7. Only two stud horses in town, and these are not remarkable for blood or stock. Ninety per cent. of horses suffered from the disease last fall; not over three per cent. of cases proved fatal. A few had not fully recovered; possibly ten per cent.; with some the cough lingers, otherwise they seem recovered.

8. No flocks of sheep in town. There are a few fine cossets of various breeds. About sixty dogs are taxed. Five dollars were paid for sheep killing during the year.

9. It is estimated that twenty-five per cent. is covered with forersts. Of this there may be twenty per cent. of new growth. It is a close question whether wood and timber are increasing; opinions differ; it is certain there is not the supply of maturely grown timber there was twenty years since. Much pasture land is sprinkled with young wood. Red oak is our most valuable timber; hemlock and spruce next. But little pine and that of second growth. Of hard wood, besides oak, beech, birch and maple are found. Most of the lumber is exported. One small shop manufactures chairs.

10. Hay is the leading crop; potatoes and English grain next; corn is not easily raised; does not pay at present prices. Pasturage is a prominent item. Many cattle from Massachusetts are summered here. About half the farmers raise milk for market.

11. Apples lead in the fruit line and these from old trees generally. Few young trees are growing. The native cranberry is common; none cultivated. The fruit grown hardly equals the consumption. Berries are plenty and increasing.

12. Not a dozen regular farmers hire men by the month or year, as only foreigners can usually be secured, and their work at present prices is unprofitable. Machinery and day labor are

preferred when it is possible to get along with such help. Farm-house help is in most demand, but the supply is far from adequate.

PETERBOROUGH.

[Reported by John Cragin.]

1. The following farmers are making money by farming in this town: John Q. Adams, John Collins, James Collins, Wm. Moore, Samuel W. Vose, Reuben Washburn, Charles McCoy, Silas Barker, James N. Dodge, George Shedd, Walter Hayward, Frank White, Cyrus Frost, Stephen D. Robb, Leonard Nayhor, John O. Nay, George Bruce, Franklin Field, Isaac White, Jasper Eliot, Timothy Hovey, Jacob Longley, Stillman Hadley, John M. Ramsey. These are all stock farms, and it is by their stock that they make money.

2. The whole farm capital of the town does not pay any per cent. It is not because the farms are not capable of paying something, it is because they are not half taken care of and worked. Farmers are more intelligent, live in better houses, have more conveniences, and do not work as hard as formerly.

3. Two-thirds of the farmers' sons leave the farms. One-fifteenth of the farms are abandoned.

4. Farmers are not more inclined to leave their pursuits this spring than formerly.

5. In the assessment of taxes we appraise farms in the same proportion as village property — as near as we can safely estimate, at their true value.

6. There is no pure-blood stock in town, as formerly. It has increased one-fifth in value.

7. Nine-tenths of the horses suffered from the horse disease. The condition of those that have recovered is good, but there were a great many that had it again this spring. They have depreciated one-fourth in value.

8. Sheep breeders: Norton Hunt, S. W. Vose, John M. Ramsey, Frank White, Franklin Field. They think it pays better than other stock. Sheep have not suffered by disease. Value of sheep killed by dogs, \$75. One hundred and thirty dogs are taxed in town.

9. About one-fifth is covered with wood and timber; two-thirds old growth. Pine, hemlock, spruce, beech, oak, birch and maple, are the principal varieties. The amount is increasing.

10. The leading crops are hay, corn, potatoes, oats, barley, wheat and rye.

11. Apples are the principal fruit.

12. The demand for labor is small, and the supply is adequate to the demand.

SHARON.

[Reported by B. H. Sanders.]

1 and 2. Farmers are not making money solely by farming; reason given that it is discouraging to attempt to farm when all property is open to view; unlike the bondholder and manufacturer we cannot cover it and thus escape taxation.

3. But few stay on the farms after they are of age. The farms are increasing every year that are abandoned to pasturing, etc.; reason given to get to a village; some persons improve their condition by so doing, others the reverse.

4. I do not know that any material change is noticeable in that respect.

5. The assessment is as high, I think in proportion to what real estate can be sold for, as in villages near here, although to a stranger from a village or city it looks very low. Stock the present year is appraised higher than in other places, if the newspaper accounts of the doing of assessors in some counties in the State are true; if there is any difference in the cash value of cattle between the several places, I would like to know why it is so. No inducement here to discriminate for or against farmers, as it is almost exclusively a farming town.

6. Less stock than formerly. This is owing partly to short crops of hay for two years back.

7. The horse disease was not as severe here as in many places; but few in town escaped entirely. No fatal cases I think.

8. But few sheep in town; those who keep them agree that they are the best paying stock kept. Fifteen dogs taxed. No damage to sheep for the past year.

9. I dare not estimate the proportion. It is largely composed of young wood, should think of more than twenty years growth. The old lots are being cut very fast. The lumber is carried from town in the log, somewhat; the remainder is sold in boards, dimension, timber, etc. The leading varieties are white pine, spruce, beech; in the east and northeast, rock maple to some extent; it cannot be bought very readily, persons preferring to

keep for the purpose of sugar making. Poplar is not very plenty, there is some birch and hemlock.

10. Of grain, barley and oats are raised in preference to wheat.

12. There are more who go from town to labor than there are come to the town for that purpose.

TEMPLE.

[Reported by H. H. Holt.]

1. Not a man in town is making money solely by farming after supporting his family; a few get a profit from milk.

2. Deduct day wages and six per cent. on capital and it takes more than the income of the best farm. Farmers do not work as hard as formerly and have better accommodations.

3 and 4. All young people leave the farm, and the fever gives no indication of abating.

5. Farmers pay more than their share of taxes.

6. There is some Ayrshire stock in town, but neat stock is not as plenty as once, though more valuable per animal. No disease.

7. Most horses had the distemper. Not more than one in a hundred died. All appear just as good as ever.

8. Nahum Child keeps sheep and regards them as profitable. The dog tax more than meets the loss among sheep by dogs.

9. About one-fourth of the town is in wood, which is fast decreasing.

10. The crops are the common ones on our farms.

11. Apples are common and pears are sometimes grown.

12. Labor is not in great demand; all do their own work.

WILTON.

[Reported by Charles Hesselton.]

1. There are not many making money solely by farming; they say that wages are so high that it takes all they can make to pay their help.

2. Have not been able to find any one that could answer the first part of this question; think the farmers, as a body, are more intelligent, live in better buildings, have more luxuries, than formerly.

3. Think ninety per cent. are leaving the farms; many of the farms have been united with other farms, within twenty years, the wood and timber cut off and left to grow up again.

4. Do not think there is any more leaving this spring than before.

5. Assess farms the same as village property; think farms have been assessed higher than some other property, in proportion to the worth.

6. There is not much pure blood stock in town; some Dutch, Alderney and Durham; think there is less stock this spring than has been before; think cows are twenty per cent. higher now than a year ago; no disease.

7. Nearly every horse in town suffered from the disease last fall; not more than six or eight fatal; do not know of any but what are all right now.

8. There is but one person in town that raises sheep except what run with cows; that is Luther Baldwin.

9. About one-twentieth of the town is covered with growth twenty years' old; at least one-fourth of the remainder is covered with growth under twenty years. The amount is diminishing; the lumber cut is considerable part manufactured into furniture; the most valuable is the pine.

10. Hay and potatoes are the leading farm crops. Corn can be bought for less than they can raise it generally. The raising of milk has been the greatest source of income to farmers of late years.

11. Apples are raised in considerable quantities. Some two thousand five hundred barrels of apples, and eight thousand bushels of cider apples, were sold last fall; blueberries are quite an item on some farms. Several farmers are trying the grape culture, but have not been in it long enough to tell whether it is going to pay or not.

12. Think the supply is equal to the demand at present.

WINDSOR.

[Reported by Samuel Chapman.]

1. Six farmers are making money.

2. Two per cent. of the farmers live better and have more convenient buildings.

3. Two-thirds leave town. Cause, high hills, drifting roads, and distance from centre of business. Decrease in population.

4. About as usual.

5. The taxes of farmers are about the same as other property

in this vicinity. Assessment of property, about cash value.

6. There is no blood stock, but neat stock is less in number, but about the same value as in former times. No disease.

7. One-third had the disease. No fatal cases. Condition of those recovered, as good as ever.

8. Daniel G. Dodge and Charles G. Jones have native sheep. No disease. Number of dogs taxed, eight. Value of sheep killed by dogs, thirty dollars, for 1872.

9. About one-fourth part. Old growth, five-sixths; under twenty years, one-sixth. Kinds, maple, beech, birch, ash, red oak, pine, spruce, hemlock, cedar, poplar, cherry, bass wood. Manufactured into board timber and shingles.

10. Corn, wheat, barley, oats, potatoes, hay, pasturing.

11. Apples and currants. Value, \$400.

12. Moderate.

CHESHIRE COUNTY.

DUBLIN.

[Reported by the Selectmen.]

1. As a rule the farmers in this town do not make money farming. There are a few cases where men with small families and good sugar orchards do make money solely by farming.

2. We do not think that farm property here pays more than three per cent. Generally the farmers of this town are more intelligent, live in better buildings, and have more conveniences and luxuries than formerly. They have more money at interest, but the stock on the farms and the farms themselves have diminished in value. We do not think that farmers work any harder or are any more economical than formerly.

3. Nine-tenths of the young men leave the farms for other pursuits. About one-fifth of the farms in town have been abandoned because the young men engage in other pursuits, causing injury to the prosperity of the town.

4. We do not think farmers here are more inclined to leave their farms than formerly, neither has their confidence in farming increased.

5. In this town we aim to appraise all property on equal

terms, at its cash value if a sale was forced. There has been no discrimination for or against the farmer in appraisals.

6. Charles W. Gowing, J. K. Smith, E. B. Howe, Warren L. Fisk and Charles R. Fisk each own some pure blood neat stock Jerseys. There is less neat stock in town than formerly. The value per animal has not materially altered. No particular disease has affected neat stock within the past year.

7. There are no stock horses owned in this town. Probably three-fourths of the horses in town were affected with the horse disease last fall. Four per cent. of the cases proved fatal. The present condition of those which recovered is about the same as before they were taken, and we do not think they have depreciated in value.

8. John Gleason, Jacob Gleason, Dexter Derby and Corydon Jones are the leading breeders of fine woolled sheep; the breeds are Merino and South Down; Charles R. Fisk and Daniel G. Jones keep and breed long-wooled sheep, Leicester blood. No serious disease has affected sheep in this town the past year. There are twenty-five dogs taxed in town. The value of sheep maimed or killed annually by dogs is fourteen dollars.

9. About one-twelfth of the area of the town is covered with wood. We think the wood and timber is slowly diminishing. The major part of the lumber cut in town is exported, and the balance manufactured into clothes pins. The most valuable varieties of trees for wood and timber in this town are hemlock, spruce, oak, ash, beech, birch and maple. We have no varieties not common to other sections. About one-fifteenth of the wood mentioned is less than twenty years old.

10. The leading farm crops are hay, maple sugar, potatoes, corn, barley, oats, wheat and rye. The production of these crops, the raising of stock and the sale of fruit and berries, constitute the sources of income to our farmers.

11. The principal kinds of fruit raised in this town are apples, pears, blueberries, blackberries, strawberries, etc. The average value of fruit annually raised is estimated at about two thousand dollars.

12. The demand for farm and farm-house labor is good and exceeds the supply. The average price paid for male labor in town is about twenty-eight dollars per month, for six months, including board; that paid for female labor is about three dollars per week, including board.

FITZWILLIAM.

[Reported by N. H. Cahill and A. J. Blake.]

1. There are but few farmers in this town who are making money by the legitimate business of farming, for the reason that this town is not well adapted to agriculture. It is a hard, granite soil, uneven and very rocky, and better adapted to grazing than tillage. We have very good pastures, and a considerable quantity of stock is annually driven up here from Massachusetts to be pastured during the grazing season. There are a few good farms and the owners are comfortably well off, but their property has been accumulating during two generations. The greater portion of the farming here is done by the elderly class of our citizens; the young men all seem to be anxious to go into the larger towns and cities to engage in mechanical or mercantile pursuits. Our tillage lands are becoming exhausted and worn out, and the tendency is to turn them to pasture or to permit them to grow up to forests, and the general impression amongst our farmers seems to be that "farming don't pay."

2. Capital invested in farming here does not pay as large a percentage as capital invested in manufacturing trade, and other kinds of business. There is now more intelligence among farmers than formerly, and their buildings are kept in very fair order, condition and repair; they have more luxuries, better carriages and teams, and more money to deposit in savings banks than formerly, but their money is earned or obtained more by cutting off wood and timber and by doing jobs of sledding in the winter season than by the legitimate business of farming. They are not more economical, and do not work harder than formerly.

3. Nearly all the sons of farmers leave the farms for other occupations as stated above in answer to the first question. About one-fifth of the land formerly devoted to tillage is or soon will be turned into pastures or left to grow up to wood and timber for the reason that it don't pay to cultivate it, and in our opinion this is the best use to which such land is adapted.

4. We cannot perceive any change here for the last five years in this particular.

5. We think the appraisal of farms compared with tillage and manufacturing property is as equal as can be made. We know of no discrimination either in favor or against the farmer in the appraisal for taxation; real estate seems to bear the burdens of

taxation. Our town debt is \$5,784.97, our valuation a little less than half a million, the percentage on our money tax is \$1.85, and on the highway tax is thirty-eight cents on a hundred dollars.

6. There are no thoroughbreds kept here, the majority of the breeds are grade Durhams and other improved breeds, some Jerseys and a few Dutch. There is less stock here than formerly, on account of the scarcity of the hay crop for the last two years, attributable to the dry season. The value per animal is about the same as at any year since the close of the war. We have had no disease among neat stock during the last year.

7. There is one good stock horse in town owned by Mr. James S. Cox, it was imported from Canada. Nearly all our horses suffered more or less from the disease last fall and winter. There was but one fatal case, all the rest have recovered and are in good condition and no depreciation in value.

8. There are eighty-three sheep kept in town, and no leading sheep breeder. The general impression is that sheep raising pays well, but our farmers are not inclined to engage in the business to any great extent. We have known of no disease among sheep the past year. The value of sheep killed by dogs has not amounted to \$5.00 per year for the past five years. Eighty-six dogs were taxed for 1873.

9. Nearly one-half of the area of the town is covered with wood, timber and brush; one-eighth old, and the remainder new, or second growth. The amount of wood and timber is annually diminishing. A part of the lumber is sawed and exported, and a part is manufactured into tubs, pails, and other articles of wooden ware. The trees for wood are birch, beech and maple; the timber is spruce, hemlock and sapling pine.

10. The leading crops are hay, oats and potatoes. The raising and fattening of stock, lumbering and teaming, are also carried on to considerable extent.

11. Apples of all varieties, with a great abundance of wild berries, particularly blueberries, which are picked and exported in large quantities; over three thousand dollars' worth were picked and exported during the last season.

11. There is not a great demand for farm labor, but laborers are in good demand in our numerous granite quarries and woodenware shops. There are but few farmers in this town who hire a laborer by the year. Our granite quarries are being worked more and more, and the granite is becoming more celebrated year by

year. This year there will be two hundred and fifty men employed in and about the quarries and granite sheds of this town and from thirty-five to forty yokes of oxen, and we can safely say that the quality of granite is not excelled by any other in the State. Fitzwilliam is annually becoming quite a celebrated resort for summer boarders, who seem anxious to resort here in large numbers, each summer season, to receive the benefits of our invigorating mountain air, and enjoy our beautiful mountain scenery. There are two good hotels, large and commodious, with accommodating and gentlemanly proprietors, who strive to do everything for the pleasure and comfort of their guests. The hotels are each capable of accommodating about seventy-five boarders during the summer months; besides this, there are several private families in town, who take from two to ten city boarders each, during the summer months.

GILSUM.

[Reported by the Selectmen.]

1. Few or no farmers are making money by cultivation alone, for reasons hereafter presented.

2. A small per cent. on the value of farms. Farmers labor under disadvantages of high wages for labor, for three or six months to cultivate and harvest his products, and spend the other six months in the disposition of those crops, or apply himself to other business, to the neglect of suitable feeding, while the manufacturer, mechanic and merchant have their business mostly under cover, and are able to pursue it the year, with constant care and labor, with slight variation in price and hours of labor. Farmers are improving in intelligence, better buildings, some conveniences, but luxuries are rare compared with other classes. Little money for interest unless obtained by extra labor off the farm or for wood and lumber. Their work is of the hardest muscular kind, and their income being small requires the greatest economy.

3. Nine-tenths of the sons of farmers leave for other pursuits, while ten per cent. of farms are left without permanent residents, and are fast losing their vegetable products. This is caused by less hours of labor under cover, more steady employ, with monthly and more pay for the year, hence farming prosperity is declining, less vegetable product, less animal stock, less trade.

4. Many farmers are wishing to sell at reduced prices and put their little in smaller compass, but few purchasers are found.

5. Farms have been appraised at their former productiveness, and remained at that rate for several years, as no inspection is had at a season when the apparent value may be seen. The loss of their primitive fertility and stately forests has much reduced their value, while mechanical and manufacturing villages have increased the merchant's interests, rents and value of buildings; thus an unfavorable valuation against the farmer.

6. No pure blood stock; less stock at a small increased value; and no disease.

7. No stock horses. Nine-tenths were diseased, four or five were lost, the rest are feeble and poor; of less value.

8. No special breeders, but raise a mixed race of Merino on Spanish stock. Sheep, with care and good success, pay as well as any other stock. Some flocks have almost disappeared, while others have not lost one.

9. About one-third or one-fourth of our surface is wood, most of it over twenty years, but fast disappearing into boards and timber, by home saws, for the market. Suitable for buildings, chairs, trays, yokes, etc. Hemlock, spruce, maple, beech, birch, ash and cherry.

10. Hay, oats, corn, barley, potatoes and apples. A valuable practice would be to drain and remove muck to higher land. Other than farming, we have woolen and leather manufactories, with trades.

11. Apples are the principal fruit.

12. There is a demand not easily supplied for labor, both in-door and out, at from one-half to two dollars per day, and the most important success may be obtained by a pleasant conduct, without all work and no play.

HARRISVILLE.

[Reported by Darius Farwell.]

1. Not any making money. Why? High taxes, high price of farm labor, short summers and long winters.

2. Farms will not pay any more than running expenses; that is, give the farmer and family fair pay for their labor and board and there will be nothing left. Farmers are more intelligent, have better houses and more conveniences than formerly. The

work is the same; it is all hard work; they have to be economical to make the sheet balance.

3. One-half or more of the sons of farmers leave the farm for other business, because all other business pays better than farming. About one in twenty of farms abandoned.

4. None leaving this spring; they are willing to trust mother earth one year more.

5. Farm property is appraised nearer to its true value than factory, mill, or village property.

6. Darius Farwell, Lyman Parker, Durhams; but few pure blood neat stock in town. There is an improvement in neat stock, but of mixed blood, and more stock in town than in 1871 and the value greater.

7. No stock horses in town. Seven-eighths of the horses suffered by the disease, but no fatal cases. Some show the effect of the disease by a slight cough, one by sores on its legs.

8. Henry A. Adams, Luther P. Eaton, Darius Farwell, Wellington W. Seaver and George W. Seaver, mixed blood. We think it pays better to keep sheep with wool at the last two years prices, or at fifty cents per pound. Sheep have not suffered by disease. Forty dogs taxed. Value of sheep killed last year, eight dollars.

9. Think one-fourth; should think one-third new growth. Wood and timber diminishing at the rate of one-thirtieth; manufactured in town into clothes-pins, washboards, pail handles and boxes. Hemlock, spruce, pine, oak, maple, beech and birch.

10. Hay, corn, potatoes and oats. The use of the mower, horse-rake, plowing in the fall, and the cultivator and harrow in the spring. Cord wood and timber, hay and potatoes, beef, poultry, eggs, butter, and hard work.

11. Apples, plums, grapes, blackberries, blueberries, cranberries, strawberries.

12. The demand for farm labor is not greater than the supply. The profits of the farm are such there is not much demand for farm labor; the demand for farm-house labor is greater than the supply; the demand says less men and more women. Give the farmer more equal taxation, protection of our home wool market, and less private legislation.

SOUTH KEENE.

[Reported by Calvin Smith.]

Are Farmers Making Money? It is according to how it is construed. If we are going to be confined to the farm only, I can truly say that the majority of them are running behind hand, because the great West is out-rivalling us in raising cattle and produce earlier and cheaper. But if we take into account lumbering and skinning farms, they are making money, which is a great mistake for the next generation. The majority of those farmers raise wool and make sugar, and some roots and hay to sell to pay their taxes and other bills, hardly make the ends meet every year on an average, and especially if they are owing for their farm.

Leaving the Farm. One of the greatest reasons and causes is, the farms are cropped and skinned; that it costs too much time to repair and to renovate; that farmers fail up and have to go to some factory to live and to raise money to support their families. Bad seasons, help scarce, and high and poor crops gets them discouraged, therefore sell for what they can get rather than to live from hand to mouth, and toil from daylight to late in the night, when they can get more money in half of the hours. I find this disease is prevailing all through this part of the State, and rushing to the village either to live without work, or play gentleman. We cannot all be farmers, neither live in the village, for sight-seeing will not support us. There is one other evil, that is, we till too much land, if the same labor on one half of the land would pay better.

Is the fever abating? I think not, it is visible to every man, and if anything, worse. How stop this tide flowing so fast? It cannot be retarded till there is equalizing of labor and produce and taxes. There is too much difference, the produce of the farm will not pay the help at the prices for the last ten years. The taxes are enormous. We pass laws to favor manufacturers, why not the farmers — for food before tools — would not our old farms be resettled if we would pass laws to that effect?

Neat Stock. This, I think, is out of the question, for any of us in this section, because we have to feed out grain too much. When West, they can be fatted by grass; and it is some so in raising; our pasturing is so poor, and our calves four weeks old

will buy a good yearling in the fall, and will be so just as long as the butchers pay the prices they do now.

Forests. Our forests are fast passing away. Take the south half of Cheshire County, fast being converted into wares and merchandise, and soon it will be impossible to get timber to make our farm buildings, and then we shall have to import. The fever has raged to such extent that many farmers are left without fire wood. The prices of wood and lumber have more than trebled within twenty-five years. Our nice sugar orchards fared hard, and the woodman's ax is still unstayed. This is a great mistake in various ways; one, I think, is the cause of our farms running out; it leaves them cold and late, and causes them to dry up on the account of drying up little brooks that used to feed them; another is, our fruit trees suffer by heavy gales and cold winds. Ought we not to pass a law to protect the forests, or be obliged to cultivate or plant every year?

MARLBOROUGH.

[Reported by A. A. Mason.]

1. The majority of the farmers in this town, I think, are laying by a few dollars each year besides supporting their families. Farmers here have learned to cultivate less and do it better.

2. I do not know of any one that has kept a register of his income. Farmers live in better buildings and are more economical than formerly. They do not work as hard as heretofore, for they are doing more work with machinery.

3. I think that five-sixths of our sons leave the farm for other pursuits. There are a number of farms that have been abandoned, the buildings taken down, and the land sold for pasturing. The cause, some of these farmers having saved a sufficient amount of money to support them in old age, desire to live in or near the village.

4. The fever is abating, for the reason that the farmers' families are so reduced in numbers that there are no more boys to spare.

5. We endeavor to appraise farms and village property alike, but we think that the valuation of the farms and stock is higher than the village property, for the reason that the value of the village property is increasing yearly, having nearly doubled within the past ten years.

6. There are some pure blood neat stock in town. Breed, Durham; a large number of grade Durham and Alderney stock. There is less neat stock in town than formerly. The value per head has doubled within the past fifteen years. There has not been any disease among neat stock for several years to notice.

7. S. A. Richardson owns a stock horse of considerable value. Nearly every horse in town had the horse disease last fall and winter. Only one case fatal. Present condition good, and they have not depreciated in value.

8. There are no leading sheep breeders in town. There are not so many sheep kept in town as ten years ago. Sheep have not suffered to any extent by disease. We have seventy-five dogs owned in town. Value of sheep killed by dogs is small, not averaging more than ten dollars yearly.

9. One-fourth, more or less, of the area of the town is in wood. I think the growth and consumption of wood are about equal. The lumber is mostly manufactured in town, into pails and chairs. The trees are beech, birch, maple, spruce, hemlock and pine.

10. The leading farm crops are hay, corn, barley, oats, potatoes and wheat.

11. The kinds of fruit are apples, pears, plums, grapes and a variety of smaller fruits, the average value of which I am unable to give.

12. There is not a very great demand for farm labor, except in the haying season, and there is a good supply of laborers in town for the demand.

MARLOW.

[Reported by E. G. Huntley.]

We have labored under great difficulty in obtaining answers to some of the most important of these questions, and, in fact, we shall have to make our report from our own observations, together with such facts as have come to our knowledge, and we wish that the report might be more satisfactory to ourselves and to you; but it is the best we can do now, yet any information you may require hereafter, we will do the best we can. In answer to the first question: "O, they have not made any money; it is tough work for us to make both ends meet." But from our observation, this, as a general thing, is not so. Perhaps some few do not make money, but we think that a majority of our farmers in Marlow do

make money; not a great amount each year, but some; yet some make more than others. They have better farms, work harder, and spend less. We have in our town many prosperous farmers. Their farms are well kept up, buildings kept in good repair. We have but a few farms, compared with other towns around us, that have been vacated, and most of them in one locality, where it was bad getting out winters.

2. We found it impossible to ascertain any facts in regard to it. I presume there is not a farmer in town that knows. In fact, I know of no one, perhaps there may be, who keeps an account, or could tell, and it is impossible for us to ascertain these facts. In regard to the intelligence of the farmers — we think our farmers grow more intelligent; they read more, investigate more, their buildings and conveniences have improved, and farmers generally have more luxuries, houses furnished better, have better carriages than formerly. But whether farmers work harder than formerly, is a question. Perhaps some do, but as a general thing, I think they do not. I have no doubt but what the farmers in Marlow have more money than formerly.

3. The proportion of our farmers' sons who leave the farm, is not large, in fact, I am thinking a goodly portion of them work at farming. Some of them will work out in the winter, some teach school. A very small proportion of our farms have been abandoned within the last ten years, and the farms so abandoned are those that are situated on back roads, where it is bad getting out in the winter; one would leave, then another; but we have but a few of them, and I do not know as it has had a very bad effect on the town. True, it has depreciated the invoice in that part of the town, but a corresponding gain is usually made in some other portion of the town.

4. I do not understand that our farmers are any more inclined to leave their farms this spring than formerly. Occasionally we hear a farmer say, "If I could sell my farm, I would go off." But as a general thing, I think farmers are as well contented as formerly.

5. In our appraisal, we endeavor to be impartial, but it is impossible to get these things just right. It has been our usual practice, and I think it is general in Cheshire county, to appraise at about three-fourths of its full value; that would be about what it would bring at a forced sale, and I am yet inclined to think that the back farms, in all towns, are appraised higher in propor-

tion than village property or stock in trade. The merchant or mechanic has the advantage over the farmer. The farmer's stock in trade all lies open to the appraisers, and is appraised according to the best judgment. The merchant has a store full of goods; the appraisers cannot see all of his goods, and if they did they would not know what they were worth, so they are obliged to take the merchant's word; so with the manufacturer. But I know of no discrimination against the farmer. The farmers generally in our town invest their surplus where the selectmen are pretty sure not to find it, although it is mostly in the savings banks, where the town gets one per cent.

6. No one makes a specialty of pure blood stock in our town, yet we have some very good stock. I think there were the most good oxen in town this spring that there has been for a number of years. The Durham prevails among our stock. The value and number of neat stock per head, compared with last year, are about the same. No disease has been among the neat stock the past year.

7. No one owns stock horses of any great value. F. J. Rogers and J. G. Freeman have each a very good stock horse, but I think there is no very remarkable blood in either. The horse disease was very general in town; but very few escaped it, and I think they all recovered; only one or two show any effects of it now.

8. James Burnap, F. J. Rogers, Luther Pitcher and Romulus Lowell are our principal sheep men. They keep no fancy breeds, raise them for the lambs and wool. Sheep have not suffered from any disease that I know of. Thirty-seven dogs were taxed last April. The value of sheep annually killed by dogs is small more were killed last year, than for a long time; we paid out twenty dollars; it will not average five dollars per year.

9. The proportion of area covered with forests is, I should judge, about equal, old and second growth. They cut out the old growth, and the young trees are left to grow. The hard-wood timber, I should judge, was increasing, while perhaps the soft wood, spruce and hemlock, are diminishing. The lumber is manufactured in town, that is, it is sawed into boards, shingles, dimension stuffs, etc., and mostly sold in Keene, sixteen miles distant. But very little hard wood is being manufactured here now. Our most valuable soft wood is hemlock, on account of its bark, which is worth from eight to ten dollars per cord, delivered at the tannery of James Burnap, who uses from one thousand to

three thousand cords per year. Spruce is a valuable soft wood for lumber. Pine, we have none of any account. Sugar maple is our most valuable hard wood, but very little of that is cut, as sugar making is one of our profitable branches of farming; then we have beech, birch and ash. These constitute our main timber. I do not know that we have any timber not grown in other parts of the State.

10. Hay constitutes, I think, the most valuable crop to our farmers; corn is raised to some extent; wheat does very well; barley is a sure crop; oats do very well, while potatoes are one of the staple crops with our farmers.

11. Fruit in this town is out of the question. Very little attention is paid to it, and I doubt whether it would pay, but if I was a farmer I would try it.

12. In regard to help, I think the farmers do not have any trouble to find out-door help; in fact, very few of our farmers hire. Girls to do housework are hard to find, but I think the farmer has no trouble in getting help.

There, Mr. Secretary! I have done the best I could under the circumstances. I am not much of a hand with a pen, and am not much used to writing; can't hardly tell "what I know about farming." One thing we in our section stand in great need of and that is a railroad, so that we can get to a market. We have a very little home market, and our nearest railroad station is sixteen miles. If we had a railroad, I think we could prosper. We have one started through our place, the Windsor and Forest Line, which we are in hopes will be built.

NELSON.

[Reported by R. H. Kittredge.]

1. We think no farmers are making money, at least none were willing to own that they were.

2. We think that the farmer does not realize any interest on the capital he has invested in his farm.

3. Almost all leave town; about one-fifth of the farms are abandoned.

4. No change for the better.

5. On the same basis. We have but very little to compare with the farmers' taxable property.

6. There is no blood stock; less neat stock than formerly, but of greater value. No diseases.

7. Almost all horses had the disease. One in forty died.

8. Josiah H. Melville, Mark Tarbox and sons, Willard Jewett and son, and Russell H. Kittredge are the leading sheep owners. The flocks are about equally divided between middle and fine wool. Twenty-nine dogs taxed. About ten dollars damage per year done by dogs.

9. About one-sixth in wood, which is diminishing. Chairs and clothes-pins are made. Beech, birch, maple, with hemlock and spruce, are the varieties.

10. Hay, small grains and potatoes are the chief crops. Rent of pastures, getting off wood and timber, and what arises from farming in a small way, from the sale of wool, etc., are the sources of income.

11. The usual kinds, but not to an extent to be made a source of profit.

12. Greater than the supply.

RICHMOND.

[Reported by A. G. Bennett.]

1. No farmers are making money, because the soil is too rough, broken and stony, and the seasons too short, and the climate too cold, to afford sufficient inducement to an active intelligent man with capital enough to work a farm to advantage for him to locate here.

2. It does not pay anything except in a few isolated cases where the owner has suffered his pastures to grow up with sappling pines, which he generally supposes is the best use the land can be put to where it is adapted. We think the mechanics make more money from their trades than the farmer from his farm alone, but cannot give figures, as we have found none who keep a journal of any kind, and very few with even an account book. Intelligence is about equal in the two classes; and if the farmer has more money at interest he did not, generally speaking, save it from the direct profits of the farm. The farmers do not live in as good houses, have as many luxuries, work as hard or practice more economy, unless from necessity.

3. Nearly all that are active and capable leave town. Their fathers take no pride in their occupation; they make no effort to

make the farm or the home beautiful or attractive, and more than all, perhaps, the boy soon learns that farming here "don't pay," and the town is going backward in wealth, enterprise and population.

4. One farm in six or eight has been abandoned. Have not noticed any recent change in this respect. We do not presume the farmers have lost faith in farming, but most of them believe there is some better way to get a living and make money, and nearly all would make some change if they could dispose of their farms to advantage.

5. It is intended to appraise all property alike on the basis of its cash value, at about two-thirds, or within one-third of its real worth.

6. Joseph B. Abbot has two Alderney cows. Neat stock is less; less in proportion to numbers, as there are not one-fifth if there are one-tenth the number of oxen in town there used to be. The cows may be some better, but are mostly native, small, not fed high, and are generally poor and shabby in the spring. No disease.

7. No stock horses. More than half the horses suffered. Not one in fifty died. We believe that all or nearly all are as well as before the disease attacked them.

8. There are very few sheep in town, probably less than seventy-five for the last three or four years. The main reason for this is in most cases, poor fences and the pastures being so full of brush and briars as to make great waste of the wool by pulling it out. There are fifty dogs in town, and not over thirty dollars damage done sheep by dogs for many years, and that by dogs belonging to other towns and to sheep driven from other towns here to pasture.

9. Perhaps one-eighth or one-tenth of the area of the town is covered with a growth of wood of some kind of at least twenty years standing, but mostly second growth. That which is large enough to cut is rapidly diminishing. There are fourteen or fifteen lumber mills in town, working from three to six months in a year, sawing boards and pail staves. One pail shop and one clothes-pin factory; the lumber is not manufactured farther than this except some of the hard wood worked into chair stock. The best of the timber is gone, very few lots but have been culled. The valuable varieties are pine, hemlock, a little spruce, beech and maple, and a little oak and chestnut in one part of the town.

There is a tree now and then of black ash, white and yellow birch and cherry, but not worthy of account, small, crooked and knotty, generally.

10. Potatoes are raised more than anything else, but few if any more, however, than are used here. Most of the farmers raise a little corn, but a field of oats, rye or barley is the exception. Esculent roots, except the potato, are cultivated scarcely at all, and we do not remember of seeing a kitchen garden, worthy of the name, for years. We know of no new method or practice among the farmers; should think, for the most part, that they carry on their business about as their fathers did, except to let their farms grow up to brush more and their buildings run down more. Many of the farmers make maple sugar in the spring. Their wives and children braid palmleaf and in the winter the farmers do some teaming for the mills, sell and sometimes get out some wood and timber which is mostly delivered at the mills or the depot.

11. Apples and blueberries; but we have no means of ascertaining the value. There are no more than four or five young orchards in town, most of the trees are old and decaying, and more than half of the orchards that were here forty years ago are dead. There is very little grafted fruit. Every other year there is some cider made, but one-half the apples are generally left to rot under the trees. Many of the women and children pick blueberries and blackberries, which are sold at Keene and Fitzwilliam. There are a few cranberries and here and there a grape vine, but the seasons are usually too short to mature the fruit.

12. There is no demand for male help except two or three weeks in haying time; or for female help, except sometimes in cases of sickness, and the supply is generally sufficient. We can only hint that help is growing more and more unreliable, inefficient and exacting, and still demanding higher pay. No farmer here can hire to profit, but does what he is disposed to do himself, and lets his farm run down.

The war, by demoralizing the great agricultural system of the South, has deprived the farmer of this great combination of influence and capital once enlisted in his favor. And while almost every other pursuit and calling has its societies, rings, government patronage and protective tariffs to aid them, the farmer is laboring at a disadvantage, and becomes a prey to railroad,

whiskey, and Indian "rings," that can buy up corrupt legislatures and Congress, and offer better inducements to both brain and muscle; while the banks — the pets of the government — in order to accommodate the speculator and enable him to make grain or any other "corner," enhance or diminish prices in his own interest, will loan him money although it may force them to withhold the pittance the farmer has deposited with them, and which, if it could be had, would enable him to hold on to his wool or his beef until the favored "ring" let go of his throat.

And while an inflated and depreciated currency causes high prices, the small farmer, and most of the farmers in our State are small comparatively, are not benefited. It is the same to him whether potatoes are fifty cents or a dollar in market if he consumes all he produces. But if rag currency and protection compel him to pay double for his salt and his hoe, it will take as much again wood which some railroad corporation, fostered, proud and bloated by especial legislation, sets its own price upon, to pay for it.

Neither farm nor farmers are flourishing in Richmond. And if this is found to be the fact throughout the State and country, we should look for the causes among the facts to which we have briefly alluded, and those of kindred nature, rather than charge it to a lack of farmers' clubs, boards of agriculture or agricultural bureaus.

RINDGE.

[Reported by the Selectmen.]

1. We think we have a few farmers in town who have made money solely by farming; at any rate their pile has increased until they have thousands of dollars at interest. We will mention one case in particular, where one of our citizens purchased a farm, some thirty-five years ago, of about one hundred acres of good soil in a high state of cultivation, and by selling hay, corn and potatoes, stock, etc., soon had money at interest; this served the purpose of a nest egg to which he has been laying ever since, but we think his farm has lost some of its original fertility, and at the present day he is receiving a much larger income from cutting coupons than from selling the products of the soil. There are others, who, in spite of high taxes, have managed to improve their farms and farm buildings, and (contrary to the fashions of the

present day) have raised up a family of children, and yet have a little money laid by for a rainy day. Another class of farmers have succeeded in getting a good living, dress well and pay something for benevolent purposes, and about hold their own. Others (and this class is quite large), have hard work to keep soul and body together, owing to high taxes, interest, and perhaps in some cases, indolence and lack of economy, yet nearly all manage in some way to get a comfortable living.

2. We are unable to present facts and figures, but are of the opinion that our best farms do not pay more than four or five per cent. on the amount invested in farm, stock, tools, etc. We think that our farmers generally are more intelligent, live in better buildings, have more conveniences and luxuries than formerly, and some of them have more money at interest. Many of our farmers have labor-saving implements such as the mowing machine, horse-rake, horse-hoe, cultivator, improved plow, etc., and perhaps do not labor so hard in the summer as formerly, but in winter we think they work harder.

3. At least nine-tenths of our young men leave the farm to engage in other employments. About one-eighth of our farms have been deserted or added to other farms within ten years. Most of them are owned by non-residents who have removed the wood and timber and turned them into pasturing, much to the detriment of the town.

4. The fever is not abating. Young men are this spring leaving the farm for other employment, not having confidence in the power of the soil to pay them the price they can get in other employments.

5. We think that farms are appraised as high and perhaps a little higher than other real estate in this town, unless it be timber land which has been growing and increasing rapidly in value, and has in some instances got ahead of the assessors. The standard has been to appraise property at what it would bring at a forced sale and under any circumstances; most of the sales in this town have been made under favorable circumstances and often at private sale, and from one-fifth to one-fourth more than the appraisal has generally been realized. We are not aware that any discrimination has been made for or against the farmer by the appraisers for taxation. We think that merchants and manufacturers have the advantage over the farmer, inasmuch as they generally have the privilege of setting their own valuation on

their stock in trade, as it is impossible for assessors to know how much capital they have invested in it, while the farmers' property is all in view and easily appraised. Quite a number of our citizens have placed their money beyond the reach of the assessor by paying up their life insurance policies. Others have deposited money in savings banks in Massachusetts; still others own stock in banks in Massachusetts, amounting in all to \$75,000 or \$100,000, all of it as we understand beyond our reach. We think a little wholesome legislation in relation to this matter would benefit us, and other towns similarly situated, and thereby benefit the State.

6. Mr. Abel F. Farrar of this town owns pure blood Jersey stock. There is less neat stock in town than formerly, but of better quality. No disease has prevailed among the neat stock the past year.

7. Hudson D. Hale owns a stallion, four years old, of some promise; we are not able to give his pedigree; his name is "Jemmy Hale." More than nine-tenths of our horses suffered from the disease last fall, but only two or three died. We think some of them are not as valuable, but how much they have depreciated in value we are not able to say.

8. But few sheep are kept in town. None of pure blood. Sixty-five dogs are taxed. From fifteen to twenty dollars worth of sheep killed and maimed by dogs, annually.

9. One-fourth of the area of the town is covered with forests, mostly second growth. Wood and timber are diminishing. Quite a large amount of wood, timber, and sawed lumber has been carried to Winchendon, Ashburnham and Fitchburg, Mass., within ten years. Various kinds of wooden ware are manufactured in our town. The principal varieties of valuable timber are pine, spruce, hemlock, chestnut, beech, birch, maple and poplar.

10. Hay, corn, potatoes, wheat, barley and oats, are the leading crops raised in this town. The chief sources of income to the farmer are from the sale of timber, wood, hay, potatoes, and other vegetables, fruit and the products of the dairy. Some of our farmers who have suitable houses and other conveniences take city boarders in summer, from which they receive some profit.

11. Apples, grapes and currants are the principal fruits cultivated in this town, but very little is sold excepting apples. Blueberries flourish in some of our pastures, and some families have made quite a business, in their season, picking and selling them;

we are not able to state the amount sold, but presume three hundred bushels are sold annually. Blackberries and raspberries also grow in our lots.

12. The demand for farm labor is not great, as farmers cannot make it pay to hire at present prices. It is difficult to obtain reliable help on the farm, and more so for the house.

SULLIVAN.

[Reported by George White.]

1. But very few, if any, are making money, and they by economy and prudence. One great reason why they do not is in consequence of the late war.

2. I think they do labor under disadvantages. Am not able to give exact figures. Think they are more intelligent, live in better buildings, and have more conveniences and luxuries than formerly. They have more money at interest. Work about the same, etc.

3. Probably three-fourths of the sons of farmers leave town for other occupations. About ten per cent. of farms have been abandoned on account of emigration and the unproductiveness of the soil, and consequently the prosperity of the town is diminished.

4. No perceptible change.

5. We intend to appraise all property as equally as possible. Real estate is appraised from ten to twenty per cent. lower than other property in consequence of so few sales. Our rule is to appraise all property at a fair auction price.

6. I do not know of any pure blood neat stock; there is a mixture of Durham and other breeds in many of our cattle. There is less neat stock in town than at some former times. The value per animal varies according to circumstances. Farmers are making efforts to raise better stock than formerly and consequently the value has been increased to some extent. No disease has affected neat stock within the past year.

7. No stock horses of value in town. Ninety per cent. of horses suffered from the horse disease, about three per cent. fatal cases. Those which recovered are able to work, but some of them are not able to do as much work as before the disease came among them. Cannot say how much they have depreciated in value.

8. Sheep breeding is not carried on to any great extent. No breed predominates. Most of our farmers keep both cattle and

sheep, as there is more profit on sheep some years, on other years there is more to be made on cattle. Sheep have not suffered by disease. Sixteen dogs are taxed this year. No sheep have been killed or maimed by dogs for several years.

9. About one-fourth part of the town is covered with forests. It is nearly all old growth, and is slowly diminishing. Should think more than ninety per cent. of the lumber cut is manufactured in town. Common lumber, chair stretchers and flour bucket hoops are manufactured. The most valuable trees for wood and timber are ash, birch, beech, maple, spruce and hemlock; cherry, oak and pine are found only in small quantities. We have no special varieties not common to other sections.

10. The leading crops are hay, corn, oats and potatoes. The principal sources of income to the farmer are lumber, wood, hay and maple sugar.

11. Apples are the only kind of fruit cultivated to any extent, and their value I could not correctly estimate.

12. The demand for labor is great, and there is not an adequate supply of men or women. The most important hint I can give in regard to this question is, to raise more children.

SURRY.

[Reported by Horace Wilcox.]

1. Having made inquiries while taking the invoice we are inclined to think that farmers in this town are not making money solely by farming, at the same time keeping up the value of the farm and supporting their families. Some of the reasons are the high rate of taxation and price of labor.

2. We think this question is partly answered in our reply to the first question. If none of our farmers are making money the per. cent of profit on farm capital must be small; we cannot pretend to give the exact figures. In regard to farmers as a body being more intelligent, living in better buildings, having more conveniences or luxuries than formerly; we think there has been some improvements in those respects.

3. We think three-fourths of the sons of farmers leave the farm and go to other trades or occupations for a living. We think there has been an eighth part of the farms in this town abandoned to wood and pasturage within ten years, one cause of which we think is the unprofitableness of farming; as to its effect on the prosperity of the town, we think it decidedly bad.

4. Cannot say that we can see any improvement in this respect.

4. In the assessment of town taxes we have endeavored to appraise as near its cash value as we could, that is, what the owner could get if he were obliged to raise the money at once on the same. As to any discrimination in favor or against the farmer on the part of appraisers, cannot say as there has been any. We think the farmer has to pay fully his share of taxes. Stock in trade is something that is difficult to get at the exact amount, likewise manufacturing interests.

6. As to any pure blooded neat stock in town, we do not know that there is any. We think there is less value in stock and less in number in town than formerly. No diseases have affected neat stock the past year.

7. As to stock horses, none are owned in this town. About nine-tenths of all the horses in town had the disease last fall and winter. No fatal cases. Cannot say that they have depreciated in value.

8. The leading sheep breeders in town are Isaac Brown, Joshua D. Blake, Gilbert Crane, Luman M. Carpenter, Benjamin M. Britton, George W. Britton and William Carpenter, who keep mostly fine wooled sheep; there are some small flocks of coarse wooled sheep in town. We believe that most of our sheep owners think that sheep pay a larger profit than other stock. They have not suffered much the past year by disease. There are from twenty-five to thirty dogs taxed in town. No sheep killed by dogs the past two years.

9. We think about one-third part of the town is covered with forests; very little of old growth timber in town; amount of wood and timber diminishing rapidly. Lumber is mostly exported to Keene; the most that is manufactured in town is clothes-pins. Maple, beech, oak, walnut, basswood, butternut and hemlock are the principal varieties.

10. Hay, corn, rye, barley, oats and potatoes are the principal crops. The principal sources of income to the farmer are his crops, his stock, wool, lumber, wood and dairy; some make quite an amount of maple sugar.

11. Apples are the principal fruit raised in town, amounting in value perhaps to the sum of one thousand dollars yearly.

12. The demand for labor, both for men and women, is good; help is scarce and wages high.

SWANZEY.

[Reported by the Representatives.]

1. No farmers are making money by their occupation. Even the profits of the pastures, usually fair, are beginning to fail.

2. Farm capital does not pay one per cent. We are not aware that farmers' houses, as a whole, are better than formerly, but we think farmers have more money.

3. Four-fifths of the sons of farmers leave town, and a few farms have been abandoned.

4. The fever still continues and causes great discouragement.

5. We design to appraise all property alike at about three-fourths of its real value.

6. No blood stock; less neat stock than formerly; value about the same per animal.

7. Nearly all horses had the epidemic last fall. Not more than one per cent. died.

8. Not many sheep in town. It don't pay to keep them on account of dogs. No disease. Dogs taxed, one hundred and six.

9. One-third area is wood, old and young, which is diminishing. It is manufactured into pails, buckets, etc. The common kinds only are found.

10. The crops are only the ordinary ones. Farmers get money by selling the crops, and now and then a horse or neat stock.

11. Not much of a fruit town. No apples and little wild fruit.

12. Labor scarce.

TROY.

[Reported by E. Bemis.]

1. I think that we have none that make money solely by farming, on account of the high price of labor and the low price of produce.

2. We do not find any that say their farms pay more than six per cent. interest, and some say they do not pay that interest. I think the farmers labor under disadvantage on account of the scarcity of labor. We have about fifty farmers in town and think the income on all the farms is not more than \$20,000. I think the farmers are full as intelligent. About one-fourth of them live in as good buildings, and have more conveniences than formerly. I think that one-fourth of the farmers have more money at

interest, but do not work any harder than in former years, and are not any more economical.

3. I think that two-thirds of the farmers' sons leave the farms for trade, and one-fourth of the farms have been abandoned within the last ten years. It does not have any material effect on the town, and the reason of their leaving their farms is they can live easier some where else.

4. We have two that have left their farms, and most of them have confidence in the power of the soil of our State.

5. I think the farmers' property is appraised higher in proportion than village residences and merchandise. The village residences have increased in value and the farms have diminished in value for the past ten years. The personal property is appraised very near its true value, but the real estate about three-fourths of its true value.

6. We have no pure blood neat stock in town. We have less in neat stock than in any former time. The value per animal is greater than for the three years past. I think it has increased about fifteen per cent. No diseases have affected neat stock the past year.

7. We have no stock horses owned in town. I think that ninety per cent. of the horses suffered from the horse disease last fall and winter; there was one fatal case. Do not think they have depreciated in value much.

8. We have one man in town who keeps a flock of sheep, Mr. Gregory Lawrence, he has sixteen sheep, they are good sheep, and are a mixed breed; he thinks it pays better than other stock. Some other farmers also have one or two, but no flocks of sheep. Have not suffered by disease. We have eighty-one dogs taxed in town. No sheep have been killed or maimed by dogs.

9. I should say that but one-sixth part of the town was covered with forests, and about two-thirds old growth and one-third new or under twenty years of age. Most of the lumber cut in town is manufactured into pails, butter tubs, pail handles, chair stretchers and clothes-pins. Think the amount of wood and timber in town is diminishing about ten per cent. The varieties are white pine, red oak, beech, birch, maple, hemlock and spruce. We have no special varieties.

10. The leading crops in town are corn, potatoes, rye, oats, barley, wheat and hay. No new practices are adopted by the farmers. The sources of income to the farmer are from the sale

of produce, etc., from the sale of butter, cheese, beef and pork, hay and grain, wood and timber, potatoes, cattle, pigs and poultry, fruit and cider, maple sugar, etc.

11. The kinds of fruit produced in town are apples, pears, cherries, plums, currants, grapes, crab apples, etc., and should say the average value in town was \$1500.

12. The demand for farm and farm-house labor is good, with a short supply of men and women both.

WALPOLE.

[Reported by B. E. Webster.]

1. I do not know of any farmers that are making any money from their farms at the present prices of labor and the amount of taxes we have to pay; our produce is very low. I have always made money stall-feeding sheep, until this year. I bought ninety-five sheep last December and gave them one hundred and sixty bushels corn, and what hay they would eat, and sent them to market the first of May and sold them for sixty-five dollars less than I paid for them. You can draw your own inference as to what the profits were.

2. I am unable to figure the per cent., it is so small. Our farmers are intelligent enough and economical enough and work hard enough, but that is not where the shoe pinches; in my opinion there are too many rings connected with the administration of the government finances.

3. There are about one-half of farmers' sons leave, thinking to get a living easier. But few farms have been abandoned in this town; the effect it has on the farmers, it gives them the blues.

4. I do not think they are inclined to leave their farms much; if they did they could not sell for two-thirds what they could have got three years ago.

5. We intend to appraise real estate at very near its cash value at a forced sale, taking into consideration the scarcity of money, and make it as equal as we can. The farmers' property is all in sight instead of being in bonds and other securities that do not get taxed.

6. We have some Alderney and some Durham cattle. I think about the same neat stock as usual; less in value than in former times. No particular disease more than usual the past year.

7. F. B. Holland has two thorough-bred stallions, very good ones; one of them has been here five years; his stock shows for itself, hard to beat. About three-fifths of the horses had the disease; very few fatal cases. The horses that had it feel well, but don't think they can endure what they could before.

8. Merino sheep take the lead here; there are some Cotswolds and some South Downs. We think sheep pay better than neat stock generally. They have suffered from foot rot, and some flocks have the scab which is worse than foot rot. One hundred and thirty-four dollars dog tax this year. One year ago one hundred and seventy dollars was put into the schools, this spring there was not quite enough to pay for damage done by dogs.

9. I think about one-quarter is covered with forests, and one-half of it second growth. It is diminishing since the steam-mill started, and there is nothing you can name but what they get out of the lumber; but a small part of it manufactured here. Chestnut and pine, and there are some of all kinds.

10. Hay and grain have been the leading farm crops. Last year one hundred acres of tobacco was raised here; we get more money out of it; I do not know what effect it will have upon the farms; we use a great amount of fertilizer and think it pays.

11. We raise a quantity of apples, but they do not pay very well; some pears; the small fruits are not raised very extensively.

12. Farm labor is not plenty but we manage to get enough by paying the prices. It is almost impossible to get a woman to do housework; the shirt factory gives employment to most all of the girls and they like it better than housework.

WESTMORELAND.

Last year one of the best reports presented was from this town; this year we present only a few items furnished by Mr. Aldrich, to the effect that few only are making money; that farming may pay five per cent. on capital, not more; that young people leave the town for other pursuits; that taxation is designed to be fair; that the town has few improved cattle; that the disease affected horses as in other towns; that few sheep are kept; one hundred and fifty dogs are taxed; one-third of the area is wood which is disappearing; that in addition to common crops tobacco is raised; that apples are abundant and labor scarce.

WINCHESTER.

[Reported by S. M. Morse.]

1. There are some farmers in town who are making money chiefly by raising grass and tobacco and fattening cattle.

2. In regard to what per cent. money invested in farms pays the owners we are not able to report, but we think it must be very small; our farmers, as a rule, do not keep their accounts in a manner to be able to tell what their profits are. Farmers are probably increasing in intelligence, and certainly live in better buildings and have more conveniences and luxuries than formerly.

3. Three-fourths. About five per cent. A desire of people to live in villages on account of better facilities for schooling and public worship.

4. There is no special change to be noticed under this head.

5. In the assessment of taxes probably farmers have had more than their true share on account of their property being more accessible to the appraisers. We are decidedly of the opinion that the farmers are paying more than their just proportion of taxes.

6. S. W. Buffum, Short Horns; James Fosgate, Alderneys; R. W. Pratt, Alderneys. There is probably less neat stock in town than in previous years. The value per animal is greater now with the exception of a short period during the war. No diseases have affected neat stock the past year.

7. O. Nickerson and A. W. Nason, Morgans. About one-half of the horses were affected with the horse disease. Not one per cent. of cases proved fatal; those that recovered are as well as before and have not depreciated in value.

8. Harvey Carlton, Prescott Coburn, Jonas Hunt, Jonas Bancroft. Mostly fine wool. Those who are keeping sheep are satisfied with their stock. There has been no prevailing disease among sheep. There are about one hundred and eighty-five dogs taxed in town and the value of sheep annually killed by dogs averages thirty or forty dollars.

9. From two-fifths to one-half of the land is covered with forests. But a small proportion of the forests are old growth and probably one-half is under twenty years of age. The wood and timber is diminishing in quantity. The lumber cut in town is partly manufactured here and partly exported: it is manufactured

into boxes and pails. The timber is pine, chestnut, hemlock, beech, birch and maple, etc. We have no special varieties not common to other sections.

10. The leading crops are tobacco, corn, potatoes, wheat, rye and oats, etc.

11. Fruits are apples, pears, peaches, plums, grapes, strawberries, etc. Average value not known.

12. The demand for farm and farm-house labor is good and the supply is hardly adequate.

SULLIVAN COUNTY.

ACWORTH.

[Reported by the Selectmen.]

1. We believe one-fourth of our farmers are making money at present prices of labor and produce, and that others increase the value of their farms, besides getting a comfortable living.

2. We judge farm capital pays about three per cent. Farmers read more, have better buildings and more luxuries than formerly.

3. Three-fourths of our young men leave for other employments, which has an injurious effect upon our prosperity.

4. The fever rages with its usual severity. Farmers are hopeful, but a little despondent.

5. The valuation of farmers' lands and other property has always been higher than that of merchandise or manufacturing interests. The discrimination has been against the farmer.

6. There are several owners of pure bloods, Durhams, Devons and Jerseys, principally. The value per animal is greater than in former times; without doubt doubled within twelve years.

7. We found two stock horses, one from Draco, and the other from Lexington. Nearly every horse in town suffered from disease last autumn. No fatal cases.

8. The leading breeds of sheep are Merino, Cotswold and South Down, to some extent; consider sheep the best paying stock. Taxed seventy-six dogs. The value of sheep killed or maimed last year, was \$140.50.

9. About one-third of the area is in wood. Timber is diminishing. Lumber mostly manufactured here and exported. The

most valuable tree is the sugar maple; spruce, hemlock, beech and birch are numerous.

10. Hay, potatoes, wheat, corn and oats, are the leading crops. The chief sources of income are from maple sugar, wool, butter, cord wood, and manufactured lumber.

11. Apples. Average value, \$6,000.

12. The demand exceeds the supply. We hire everything in the shape of humanity.

CHARLESTOWN.

[Reported by the Selectmen.]

Charlestown is situated in the Connecticut river valley, is one of the best farming towns in the State, has excellent interval land, the eastern part is somewhat hilly, but strong and productive.

1. Many of our farmers are improving their farms, supporting their families comfortably, and their children have the benefit of good schools. A principal part of them obtain a good living and some lay up money, from one quarter to one-half. This is only accomplished by hard, laborious labor, prudence and economy.

2. On account of the western competition, and the high price of labor, the per cent. of profits of farming is quite small, from three to four per cent. Farmers, as a body, are more intelligent, have more convenient and comfortable buildings, better farming implements, etc., than formerly; they do not work as hard or have as much money.

3. About one-third of farmers' sons leave the farm for other pursuits. One tenth of the farms have been annexed to other farms and turned to pasturage and woodland. The cause of these results is, the high price of labor and low price of produce.

4. Many of our farmers still have courage and will persevere and make farming pay.

5. In the assessment of our taxes we intend to make our appraisal equal for all classes. We appraise all taxable property at its true cash value (say at a forced sale). There is no discrimination for or against the farmer.

6. E. O. Walker, Sherman Paris, George Hamlin and P. A. Evans own pure-blooded stock, Durhams, Alderneys and Jerseys. There is not as much neat stock in town as formerly. The value

per animal is greater than formerly. It has increased perhaps one-third. There has been no cattle disease in town the past year.

7. There are some good stock horses in town, but none that are thoroughbred. Ninety-five per cent. were affected by the prevailing disease (epizootic), but only two or three died from it. Some have not fully recovered as yet, but we do not think they have decreased in value.

8. John W. Taylor, Ira Perry, E. O. Walker, Alpheus Perry, Lucien and Lewis Lane and Abel Hunt breed Cotswold sheep, Samuel E. Gowen, Peter A. Evans and H. A. Hooper grade sheep. Breeders generally consider that it pays better than other stock. Sheep have suffered some from foot rot. There are taxed in town one hundred and fifty dogs. The value of sheep annually killed or maimed by dogs is estimated at seventy-five dollars.

9. Probably about one-third of the area of the town is covered with forest; a greater part is of second growth (about three-fourths). The amount of wood and timber is diminishing. The wood cut in town, not used for fuel, railroad ties, etc., is exported, such as boards, plank and timber. Oak is sold for car timber and got out in the rough and exported for chairs. The valuable varieties in town are ash, oak, chestnut and pine.

10. The leading farm crops in town are hay, corn, the smaller grains and potatoes. Some have raised tobacco and onions successfully. Plaster and ashes are used as fertilizers.

11. Considerable attention is paid to the production of apples, pears and grapes. Joseph Dinsmoor, an elderly man of seventy years of age, has an extensive apple orchard. He began in 1865 to set out and graft his trees; last fall he gathered sixty barrels of fruit. A. N. Whitaker has a fine young orchard of pears, just commencing to bear. There are large quantities of small fruits that grow wild, such as strawberries, raspberries, blackberries, gooseberries, blueberries, etc. It would be difficult to estimate their value for any given year.

12. The demand for farm labor is good; there is not an adequate supply. Men command great pay and work only ten hours a day; they prefer other employments. Female help is likewise very scarce.

CLAREMONT.

We have a brief communication from the chairman of the board of selectmen, which it would do him and his townsmen great injustice to publish. We therefore lay it aside and give place to the accompanying excellent paper prepared by Col. O. F. R. Waite:

Being in Connecticut River Valley, this is one of the best farming towns in New Hampshire, and her farmers are generally intelligent, industrious and independent. Her large village and extensive manufactories furnish a home market for more of every kind of farm produce than is raised. The following answers to the twelve questions in the circular of the Secretary of the Board of Agriculture of the 20th of March, 1873, convey but a faint idea of the beauty and fertility of many of her farms, or the general comfort everywhere to be seen within the limits of the town.

1. The most, say from one-half to three-fourths of the farmers in town, are saving something annually after supporting their families comfortably and educating their children in good schools. This by mixed agriculture—the production of the various kinds of grain, potatoes, the dairy, and cattle and wool. There are but very few farmers in town who are not making a good living, with moderate industry and economy.

2. This is a complicated question, and an intelligent answer to it is difficult to give. It is known that almost all farmers who have their farms nearly clear from debt are improving their fields and buildings, supporting their families better, dress them better, ride in good carriages, and are saving more money than the average of mechanics and men engaged in mercantile pursuits who have an equal amount invested in their business and houses. Yet farmers generally feel that they have a license to complain at the high price of labor and the low rates of some kinds of produce as compared with ten years ago. Almost without an exception farmers are more intelligent, take more papers, read more, live in better buildings, and have more conveniences and luxuries than formerly. Most of them have more money at interest, work less hours, and are generally not more economical, if so much so, as before the war. There is no class in the community that lives so well, has so much leisure, is so independent, or complains so much of hard times as the farmer. He does not

stop to consider that if a mechanic or professional man has an income of from eight to twelve hundred dollars a year, he has to pay high rents, buy his fuel and everything he eats, and if he has much family, find himself at the last about where he was the first end of the year; whereas the average farmer, with a less capital invested, has supported his family more respectably and better, his children have had more means of improvement, he has added something to the value of his farm by way of improvements, and his deposit in the saving bank has increased.

3. It is safe to say that from two-thirds to three-quarters of farmers' sons leave the farm for other pursuits. But very few farms — not ten per cent. — have been abandoned to wool or pasturing, or been united with other farms in the last ten years.

4. There is not more disposition this spring than formerly to abandon farming for other pursuits.

5. It is the general opinion that farms and farm property are appraised nearer to their real value than village residences, manufacturing property or stocks in trade, though selectmen have generally tried to get as nearly as possible at the true cost value of all productive property in making up their tax lists. There has probably been no discrimination in favor of any one class of property to the prejudice of others.

6. There are some pure blooded cattle in town of several different breeds, principally, however, Durhams, Devons and Jerseys; and farmers are becoming informed upon the subject, are giving more attention to breeds of cattle, and are breeding from better animals than formerly; consequently they are considerably increased in value, probably twenty-five per cent. in ten years. There has been no cattle disease in town the past year. The number of neat cattle has not varied much in the last few years.

7. There are but few valuable stock horses owned in town, and none that are thoroughbred. Last fall almost all the livery, stage, team and driving horses in the village were more or less affected by the prevailing horse disease, while farm horses, and those that had run out during the summer, suffered but little comparatively. But very few, not a quarter of one per cent., died, while all are apparently well now, and their value has not been perceptibly diminished by the disease.

8. Col. Russell Jarvis, Dr. S. G. Jarvis, J. P. Upham, Elijah Whitmore, Mighill Dustin and Dr. S. A. Sabine are among the largest sheep breeders in town. Mr. Dustin has quite a flock of

Cotswolds, while the others are Merinos. Sheep, at the present price of wool, are thought to pay quite as large a profit as any other kind of farm stock. There has been no prevailing disease amongst them during the past year. Dogs destroyed two hundred and forty-two dollars worth of sheep, and the dog tax was one hundred and ninety-seven; and this is about an average for the last five years.

9. Probably from a fifth to an eighth of the area of the town is covered with growing timber, more than half of which is what would be called old growth. It is not now diminishing in amount. All of the timber cut in town is manufactured here, mostly hemlock and spruce, into building materials. A large share of the wood consumed comes from adjoining towns.

10. The leading crops on the river and valley farms are corn and the smaller grains and hay, while the hill farms produce the smaller grains, hay and potatoes. A few farmers have raised tobacco successfully, and on what is known as the "Cupola Farm," owned by Hon. Benjamin H. Steele, of Vermont, special attention is being given to the dairy; from thirty to forty cows are kept, and their milk is made into butter and cheese, which finds a ready market in the village. Most farmers are using considerable quantities of commercial fertilizers, plaster and ashes.

11. There is a growing interest in the production of apples, pears and grapes, but none of our farmers are making a specialty of this branch of husbandry; and any estimate of the value of the crop for any given year, or an average for the last ten years, would be wide of the true mark.

12. The labor question has become a very important one, since labor is at the foundation of all productive industry, and will always command its full value. The supply and demand for farm and farm-house labor keep pretty even pace with each other. Many, and indeed most farmers in this vicinity, have introduced the latest improved machines and implements for saving manual labor, such as planters, cultivators, mowers and horse-rakes.

If there is any one mistake more fatal to the success of the farmer than others, it is for him to attempt to produce upon his lands what they are not calculated to grow in profusion and perfection. Almost all New Hampshire farmers think they must grow a little of nearly every kind of grain, vegetable and fruit; keep a few sheep; make a little butter and cheese; raise a few cattle, and a colt or two, and indeed do a little of everything.

This is about as sensible as it would be for a mechanic—because he is a mechanic—to attempt to make his own shoes, clothes, wagons, do his blacksmithing and carpenter work; or for a professional man to do his own doctoring, law business and preaching. No one man can do a great variety of work and do it economically or well, nor can a farmer possibly understand thoroughly every conceivable branch of husbandry, and pursue them all, and expect the best results; nor is every farm capable of producing equally well horses, cattle, sheep, and other farm stock, and every kind of cereal and vegetable and hay, with the best profit. If our farmers would study the character and capacity of their farms and then turn them to the production of such crops or stock only as they are able to produce in the greatest abundance and perfection, and then learn to do these few things to the best advantage and in the most perfect manner, the results would be much more satisfactory than to do such a great variety, all indifferently well, and to but small profit. Artisans, in their wisdom, have so divided up their work that each has a particular part assigned him—one man makes but one of the many parts of a watch, another makes another part, and so on until all parts are made, when another man puts them together and makes the watch tick and keep the time by which a day is divided; one man makes the spokes, another the felloes, another the hub, while a fourth puts them together and completes the wheel of a carriage. The same general system is pursued in every considerable mechanical establishment, and in this way each part of the work in hand is done rapidly and well; and establishments pursuing a different system cannot compete with them either in price or quality of work.

It would require a much longer article than you can spare room for in your report to make this matter clear to a majority of men who are and have been all their lives practicing differently, but the subject is most certainly worthy of serious consideration by the farmers of New Hampshire. This is but a hint for such as choose to take it.

CORNISH.

[Reported by J. M. Davidson.]

1. We have some one hundred and eighty farmers in town, who make farming their business, and one hundred of them are making money solely by farming, besides supporting their families and improving their farms.

2. Farm capital pays five per cent. Farmers in our town do not labor under disadvantages, compared with the mechanic and merchant. Farmers' income, about \$70,000; are more intelligent, live in better buildings and have more conveniences than formerly and have more money at interest. Most of them work harder and are generally economical.

3. Seven-eighths of the sons of farmers in town leave the farms for other pursuits. About ten farms have an abundance of wood and pasture. Some of these farms were located on the sides of the mountain, and were very productive when the land was new and by constant cropping they have become poor, and the first settlers died off and moved away, and the land has passed into other hands, to be used for pastures and wood.

4. Our farmers are not inclined to leave their farms, and do still have confidence in the power of the soil of our State to compensate them for their labor.

5. In appraising our farms or real estate, very near what they would sell for cash in hand, also all other property in the same manner. No discrimination in favor or against the farmer, in our opinion.

6. We have some pure blood stock. C. E. Jackson, has the Alderney, and some other farmers have cows of that breed, but the Durhams prevail in our town; most of our farmers have gone into the breed. Joseph B. Comings has had the best stock of the Durham for the past five years, and one of our most prominent farms in town; the value of our stock has increased, for the past ten years, one-third. No diseases have affected neat stock for the past year, and stock is looking well this year.

7. We fail of having stock horses in our town worth mentioning. Seven-eighths of the horses in town had the horse disease last fall and winter; they have all come out of it and appear as well as ever, except four or five. Two have died.

8. The leading sheep-breeders in town are Read Shed, C. F. Huggins, Chester B. Pike, J. B. Wellman, A. E. Wellman, J. B. Comings; and they think it pays. It is the opinion of all farmers in town that it pays to keep sheep. Our dog tax last year was one hundred and seven dollars; damage done by dogs in 1872, two hundred and thirty-two dollars; number of dogs this year, one hundred and twelve.

9. About one-sixth covered with forest; one-fourth old growth. But a very small portion under twenty-years' growth. Decreasing of the two. Wood and lumber mostly exported; lumber used in town is for building and repairing farm buildings. The varieties of timber are maple, beech, birch, spruce, hemlock, ash and oak.

10. The leading farm crops in town are hay, corn, wheat, rye, oats, beans, potatoes and apples. Produce: wool, beef, poultry, mutton, very little pork, butter, and some cheese. Captain C. B. Pike, and some other farmers on the river, have commenced cultivating tobacco.

11. Fruits of this town are apples (Baldwins, russets, greenings and some other varieties), and a large amount of common apples, plums, pears, cherries, grapes and strawberries. Two thousand dollars' worth of fruit are grown in this town.

12. Farm and farm-house labor is not quite adequate for the demand. In regard to the important requisite to the success of farming — less wages and more help; we could then improve our farms, and get a larger income.

GOSHEN.

The Secretary obtained a few facts from Mr. Kelley, the Representative of the town. He suggests that high taxes, high labor and want of water-power make farming poor business. The young people all leave town, and leave the old folks to care for the farm the best they can. The farming interest is depreciating. There is no pure blood stock. The horses all suffered by disease last fall, but were not permanently injured. Some sheep are kept and would prove profitable but for dogs, that worry and destroy them. One third of the town is covered with wood, which is diminishing. Wooden ware is manufactured there to some extent. The crops are only the ordinary ones, with some fruit.

GRANTHAM.

[Reported by Edwin Sargent.]

1. There are some farmers in this town, perhaps one-fifth, who are saving something annually, aside from supporting their families, we think principally by the dairy, and raising stock and wool; but the majority farm a little, and work at something else a little to get a living, and then complain that farming does not pay. If people would apply themselves to farming with as much energy as they do to other pursuits, they would find a great improvement in their farms, and a material difference in their income at the end of the year.

2. We do not think farm capital pays the per cent. that stock in trade does. We have no means of giving exact figures in regard to farm incomes; it is impossible for the selectmen to find out by inquiry at the time of taking the invoice; the reply is invariably, "we do not make anything." We think, as a class, farmers are more intelligent, have more conveniences about their buildings, more machines and implements for saving manual labor, and more luxuries than formerly. We do not think they work harder or are more economical.

3. Probably three-fourths of the young men leave the farm for other pursuits. A few farms, perhaps ten per cent., have been abandoned to wood and pasturage.

4. Do not think farmers are more inclined to leave the farm this spring than formerly.

5. We think that farms in this town are appraised higher than the village property; there has probably been no discrimination either for or against the farmer, but the amount of his property is more easily ascertained than manufacturing property or stock in trade, the appraisers being obliged to rely, in a great measure, upon the statements of the owners as to the amount of their property.

6. There are a few Jersey cattle in town. In the invoice of 1873 compared with 1863 we find a decrease of one-sixth in neat stock. The value per animal is about the same. There has been no cattle disease the past year.

7. There is one stock horse in town. We think nearly every horse suffered more or less from the prevailing disease last fall. No fatal cases. Think most of them have recovered from the

effects of it, and do not know as their value has diminished to any amount.

8. No leading sheep breeders in town. The greater proportion of the sheep are Merinos. It is generally thought that sheep pay as well as any kind of stock, still there are only one-third as many kept in town as there was ten years ago. There has been no prevailing disease among them the past year and none destroyed by dogs. Tax on dogs, this year, forty-one dollars.

9. About one-half the area of the town is covered with forest, mostly old growth. We think the wood increases as fast as consumed, but the timber is diminishing at the rate of from eight to ten thousand feet a year; it is sawed into boards, dimensions and shingles, and exported. We have beech, birch, maple, spruce, hemlock, ash, and occasionally a grand old pine.

10. The leading crops are hay, oats, wheat, corn and potatoes.

11. Apples, pears, plums, cherries, a few cultivated strawberries; then we have strawberries, raspberries, blueberries and blackberries that grow wild. We have no means of knowing the average amount.

12. The demand for labor far exceeds the supply, and help demand such high wages that farmers feel as though the income of the farm will not admit of the outlay, so in many cases they only cultivate what they can do themselves without hiring much help.

LANGDON.

[Reported by the Selectmen.]

1. There are very few, if any. The reason why is, high cost of labor, high taxes, and low prices of produce.

2. Little or none, reasons given above.

3. From eight to twelve per cent. No farms abandoned to wood and pasturage.

4. The fever has not yet turned.

5. In the assessment of taxes we appraise all property at its true cash value.

5. Robert Elwell, Henry M. Elwell, William F. Loomis, Short Horn breed. There are more cattle in town and less sheep than in former years. Value about the same as for the last few years. None.

7. Frank M. Wetherbee has a stock horse. All horses had

disease, one fatal. The condition of those that were sick is as good as formerly.

8. Henry M. Elwell is the only breeder of pure blooded sheep, Spanish Merino; Burrill Porter, Thomas Winch, Roswell Huntoon, Joseph Russell, grade Merinos. Some flocks have suffered from foot rot. Forty-two dogs taxed in 1873. There has not been \$40 damage done to sheep by dogs for the last fifteen years.

9. About five per cent. About four-fifths old growth. Lumber is manufactured into dimension timber and boards. Pine, hemlock, chestnut, oak, birch, beech and maple.

10. Hay, corn, oats, potatoes and tobacco.

11. Apples, grapes, pears and plums.

12. The supply is equal to the demand.

LEMPSTER.

[Reported by the Selectmen.]

1. There may be a few that are making money but on the whole the farms are reduced in value where a man lays by much money. We think the farmers do not any more than keep their buildings in repair and keep their farms up.

2. At the present rate of taxes and hired help we conclude the per cent. small if anything above living and educational expenditures. We think the people in town keep up their buildings, and have as many luxuries as formerly. Cannot say that they work harder or have more money than formerly.

3. The greater portion of the boys leave town for farming and other pursuits. We think about one-twentieth of the farms have been abandoned; the persons thought they might do better at something else. Do not think it has lessened the prosperity of the town.

4. Think there are no more that are leaving than usual.

5. Farms are appraised according to location and with all property as near cash value as can be done under the circumstances. There has been no discrimination that we know of.

6. Alden and F. C. Carey, breed Durhams; J. G. Hosley, Devons. Think about the usual amount of stock in numbers and value.

7. C. F. Carr and L. A. Purnmont own stallions; Carr's horse is Young St. Lawrence, Purnmont's is an N. Y. horse. The greater part of the horses in town had the disease but very few cases

proved fatal and those that had it are not injured to any extent that we have learned.

8. Sheep business is rather small in town and what there is are a mixture of breeds. Not any that we are aware of. The number of dogs is forty-seven this year, and about fifteen dollars on average we think damage by dogs to sheep.

9. About one-third. The greater portion is an old growth of several years. We do not think the gain or loss in wood varies much. Mostly exported. Beech, maple, spruce and hemlock. None.

10. Potatoes, oats and maple sugar. We do not know of any new practices.

11. Apples principally, and the amount for market very small.

12. Good, where there is any one that can afford to hire, but our help mostly go to other towns to find employment.

SUNAPEE.

[Reported by Daniel E. Eastman.]

The best farmers in town, those that keep their farms in the best cultivation and have the best stocks of cattle, say that they cannot make enough to pay their expenses, therefore their per cent. is on the wrong side of their cash book. Most of the young men are leaving the farms and engaging in other occupations. Probably most of the farms are taxed as much as they would bring at auction with the money down. Many farms are for sale, or a great many farmers would like to sell their farms if they could get a fair price for them. Perhaps village residences are not taxed so high for what they would bring, cash down, as farms.

Do not know as there is any pure blood neat stock in town. There is not so much neat stock in town now as in former times, owing greatly to the scarcity of hay for the past two or three years.

There were no fatal cases of the horse disease last year, and probably not more than one-third or one-fourth of the horses in town had the disease.

But very few sheep are kept in town, and those may as well be called the old-fashioned coarse-wool ones. We get fifty-six dollars' tax on dogs the present year, including two females, making

fifty-four dogs. There has been no damage to sheep by dogs for some three years, and then about six dollars.

Perhaps one-sixth part of the land in town is covered with forests, and nearly or quite all is old growth, or over twenty years' old. The timber and wood are decreasing; cannot tell at what rate. From three hundred to four hundred cords, mostly beech wood, is manufactured into clothes-pines; about three hundred cords of birch wood is manufactured into shoe-pegs, but owing to the severe winter, they have not got as much lumber the present season. Ash is manufactured into handles of various kinds and threshing-machines; but much of this comes from out of town, at least, a large part of it. Maple, beech, birch, spruce and hemlock, are the principal varieties of wood and timber; do not know of any special varieties.

The leading crops in town are wheat, potatoes, corn, oats, barley and grass.

The new methods practiced by farmers are condemned by some and by some are practiced for a while, and then abandoned. Labor is too high and scarce, they think, to venture to a great extent in uncertainties.

Fruit is not very abundant in town, but a greater interest is felt towards a greater yield of all kinds.

Do not know of a farmer in town that hires men or women's help by the season. They all say " 'twon't pay." It is impossible to get help of either kind; they all leave the farms for other employment, or nearly all.

UNITY.

[Reported by the Selectmen.]

1. Are farmers making money? All things considered we answer in the negative.

2. We think there are but few if any farmers in Unity, who, even being so fortunate as to have help enough in their own families to carry on the farm, can support a family and realize for their labor six per cent. interest on the investment in real and personal estate, being just equivalent to a family working for their board and clothing. There are many farmers who have for several years stood under but a small debt, and, although prudent, have been unable to cancel it. It is an opinion of many of our farmers, some of whom are over threescore and ten, to hire the

whole labor on the farm for the year, the income would be insufficient to support his family and pay current expenses. The most of farmers are well educated; there is no doubt about their good sense and intelligence being superior to former years, and many improvements in and about the premises, which add to utility and convenience are the result. Whatever farmers may have done heretofore, they work hard enough now. Many old farmers have long had money at interest, which was dearly earned by the sweat of the brow, in years gone by.

3. One-half or more of the sons remain on the farm. No abandonment of farms for the last ten years.

4. The most of farmers feel at home, are contented and will continue to till the soil as long as mother earth yields enough to supply the wants of nature.

5. There is no manufacturing in Unity. Village is small; nearly every villager has a farm. Real estate has been appraised from three-fourths to four-fifths of its cash value at private sale; were it sold under the hammer at cash, some of it would not exceed the appraisal. All kinds of stock have been appraised at what was considered to be a safe cash value under the hammer.

6. The amount of stock in town is less than formerly, yet the value per animal is good as ever. The cause of decrease is short crops of hay. No diseases among neat stock. No pure blood.

7. No stock horses in town. All or nearly all of the horses had the horse disease, but generally a light run, and no case proved fatal. They are now mostly sound and free from disease, and are considered as good as before.

8. Sheep breeders, Messrs. Glidden, Neal, Quimby, Breed, Johnson, Straw, and some others. Stock about one-half with sheep, Merino breed. Our wool growers think it better economy to stock partly with sheep, wool being at remunerating prices. Wool growers would disagree in the price of wool which makes it parallel to neat stock in profit. While wool ranged from forty to forty-five cents per pound, all were agreed that it was down-hill business and reduced their flocks; some sold out entire. Price of wool is so fluctuating there is less reliance upon it than upon neat stock. We think at last year's price, sixty cents per pound, wool growing pays; some might make it pay at less price. Many flocks were afflicted with hoof rot a few years ago; they were disposed of and the disease disappeared. The two past years, scab made its appearance in some of the best flocks; these

have been disposed of, also, for what they would bring. Sheep have suffered but little from dogs, fifteen dollars the past year. Seventy dogs in town which are mostly of small size and peaceable nature.

9. About one-eighth of the town is forest; one-tenth of the growth is new. Wood and timber for the last quarter of a century have rapidly diminished. Many farms have been cut entirely bare, but a majority have a good supply for home use, and about one-fourth have a small surplus. The wood, lumber and bark are marketed in the three adjoining towns, Newport, Claremont and Charlestown, at their depots and villages. Varieties of hard wood, maple, birch, beech, ash and red oak; soft wood, hemlock, spruce, bass, but little pine.

10. Hay is the main crop; wheat is grown with good success on the high lands; winter rye on dry lands; oats and potatoes everywhere. Although corn succeeds well there is not enough grown in town for home consumption; considerable money goes west, or rather to railroad monopolies for its purchase. Those farmers who have a surplus of wood and lumber realize a better income from that source than any other on the farm.

11. Apples are the principal fruit; we are unable to state the average value of the product.

12. The demand for labor exceeds the supply; women's labor more scarce than men's. This deficiency of labor is an impediment to the success of the farmer. More labor would be employed on the farm if the corresponding necessary labor could be purchased at any reasonable rate in the house.

WASHINGTON.

[Reported by the Selectmen and Town Clerk.]

1. None are making money. They decrease the value of their farms by cutting off wood and lumber, and selling hay.

2. The farm increase is not above three per cent. Farmers are more intelligent and have more comforts than formerly but not as much money. Do not work as hard and are not as frugal.

3. About three-fourths of the young people leave, and two-fifths of the farms have been abandoned on account of the cold and bleak climate.

4. The fever has not abated.

5. The design is to appraise equitably, of about three-fourths their true value. Farm property is put at a low figure.

6. There is only mixed neat stock; less than at former times, but the value per animal is greater, by one-fourth. No diseases.

7. S. B. Strickland has the Ashuelot Morgan stock horse. All had the horse distemper last fall, none died and all appear well now.

8. Mixed blood of sheep. Sheep pay. Loss by dogs one hundred dollars. Dogs taxed, fifty-five.

9. Wood is diminishing, one-third of the area being now covered, three-fourths old growth. It is mostly exported, some is manufactured into bobbins.

10. In addition to common crops, we may name as sources of income maple sugar, hay, butter and wool.

11. Apples to the value of one thousand dollars a year are grown.

12. The supply is inadequate and often poor. Some inducement must be offered the young to stay at home or our farms will be abandoned.

GRAFTON COUNTY.

ASHLAND.

[Reported by S. C. Baker.]

1. Willis H. Calley, William Currier, Samuel Shepard, Edwin B. Currier, Charles C. Eastman are making money by farming.

2. As a whole farming does not pay.

3. All leave them. Are but three men in town who occupy the farms of their fathers and they are forty years old or upwards. Not a young man in town, under thirty, engaged in farming. No farms have been given up entirely during the last ten years.

4. Are engaging this spring as usual.

5. The last two years we have discriminated in favor of farms.

6. No pure blooded neat stock. Native, Devon and Jersey mixed. No prevailing disease among them.

7. S. C. Baker owns a three year old stallion that weighs one thousand and seventy pounds; was sired by a horse whose father

was the "Abdallah" and dam a "Rocky Mountain." The colt's dam was a Morgan mare from Maine; appraised by selectmen this spring, \$300. Nearly all horses had the horse disease. None died. All came out of it well that were taken care of and not exposed while sick. Have several valuable horses in town that were appraised two hundred and fifty dollars, and over.

8. Willis H. Calley, William Carrier, Edwin B. Carrier, Chas. C. Eastman, Joseph A. Baker and S. C. Baker. They think it pays to keep sheep. No prevailing disease. Sixty-eight dogs. Damages paid for sheep killed, \$45.06 in 1871, and \$16 in 1872.

9. Nearly two-thirds. One-tenth diminishing, timber faster than wood. Manufactured in town into boards, planks, shoe-pegs, barrels, shingles, laths and dimension stuff. White and red oak, white and pitch pine, white and yellow birch, and white maple for shoe-pegs, and poplar for barrels.

10. Indian corn, wheat, oats, beans, peas, potatoes and hay. Straw is worth thirteen dollars per ton to manufacture into straw boards. Wood, four dollars and a half per cord.

11. Apples are raised in quantities. Several are cultivating strawberries. Several hundred bushels of blueberries are shipped annually; average price, three dollars per bushel.

12. There is an adequate supply. Farmers do not work as many hours as manufacturers and mechanics. All crops, except Indian corn, pay, with help at present prices. It is cheaper to buy corn than raise it. Good help is worth one dollar and a half per day.

Ashland is not, strictly speaking, an agricultural town. Valuation of town, \$578,394; valuation of district number one, including village, \$500,208; valuation of rest of town, \$78,186.

BENTON.

[Reported by the Selectmen.]

1. We know of no farmers making money by farming at this time. Prices of produce are too low, compared with labor and taxes.

2. We think the capital invested in farming pays less than six per cent. Farmers have no more money at interest, but more debts; work as hard as formerly, but are not more economical.

3. Full one-half of the sons of farmers leave the farm for other trades and professions. Very few farms are abandoned to wood or pasturage, or few united to other farms.

4. About the same number are staying on the farm, but many are anxious to sell, more than ever before.

5. Taxes on farms are very equally assessed, compared with other kinds of property, and at a cash value very near what they would sell at a forced sale. There is no discrimination for or against the farmer.

6. No particular breed of cattle, some of several breeds, Durhams, Devons, Alderney, etc. Perhaps a little less stock in town than formerly. Value about the same as the past five years. No particular diseases the past year.

7. E. C. Winchester and William Tibbetts own stock horses in town, of the Morgan breed. The majority of the horses in town had the horse disease last fall and winter, but all recovered. The value is about as usual.

8. Charles Whitaker, Samuel Howe, M. W. and C. E. True and James Page are the principal sheep owners. It pays as well, and is more convenient to manage, than other kinds of stock. Sheep have had no serious disease. There are thirty dogs taxed in town. Perhaps six sheep are annually killed by dogs.

9. About three-fourths of the area of the town is covered with wood and timber; about one-twelfth part is less than twenty years' growth. Timber is decreasing. Wood grows as fast as destroyed. The lumber in town is mostly spruce, and is sent away as soon as wanted. Beech, poplar, birch and maple still in town.

10. Hay, potatoes and oats are the staple crops.

11. Little fruit in town, mostly apples, and but few grafted.

12. The demand for labor is much greater than the supply; and while we have done as well as many other towns, yet our hills cannot be suitably cultivated, and must eventually be abandoned, unless labor is more plenty and reliable. We consider the labor question above all others, and if the board of agriculture can relieve it, please let us know where we can hire a man to work on a farm, that will work in the time he agrees to, that will not be drunk or lazy, that has a pride in doing things right and well. Must New England be cultivated with Chinese labor? or must it go back to the forest?

BETHLEHEM.

[Reported by W. A. McGregory.]

1. Do not think farmers are making anything above their expenses.

2. Cannot give any very satisfactory answer to this question. Farmers have very good buildings in this town, live well, have a plenty of everything needful, and some have money at interest.

3. Three-fourths leave for other pursuits. Do not think any farms have been abandoned or united with others. The effect of sons leaving is throwing the farms into the hands of foreigners.

4. Farmers are more inclined to sell than to carry on their farms.

5. Think all real estate is rated about equal for taxation in this town.

6. Isaac S. Cruft, Jerseys. Less neat stock than in former years. Value better. Not any diseases.

7. C. J. Parker, Morgan stallion. About all the horses in town suffered from the disease. Not more than one in twenty-five died. Most of them are healthy. Have not depreciated in value very much.

8. But few sheep in town. Not any disease among sheep. Seventy-eight dogs are taxed. Paid about thirty dollars last year for sheep killed.

9. Two-thirds, principally old growth. Timber is being cut off at the rate of about nine million feet annually, mostly sawed in town. The varieties are pine, spruce, hemlock, fir, birch, maple, ash, basswood.

10. Hay, potatoes, wheat, oats, barley and corn. Have a good market for all kinds of farm produce. From thirty to forty thousand bushels of potatoes are annually made into starch in this town.

11. Not much fruit in town, a small amount of apples.

12. Not much demand for farm and farm-house labor, but a great demand for labor in mills, etc.

NOTE. Tax bonds; have the deposits in savings banks taxed the same per cent. as other property, thus the State would help the farmer.

BRIDGEWATER.

[Reported by Horace Brown.]

1. I think Thomas Hammond, Abner Fowler, David Clement, Samuel Fifield and Phineas B. Smith are making money by farming, including stock raising.

2. I think, taking this town as a whole, farming pays not over four per cent. The farmer labors under many disadvantages. Farmers are in better circumstances, generally, than before the war; have more of the luxuries of life; in fact they got in the way of fast living in war time and doubtless are living beyond their income to-day. They have more money at interest, work harder and are not as economical.

3. Three-fourths of farmers' sons are leaving farm pursuits when they are of age or before. About ten per cent. of the farms have been abandoned the past ten years, in consequence of the sterility of the soil in this town; the effect is real estate in this town is diminishing in value. More farms in this town are for sale than usual.

4. Farmers are more anxious than ever to sell.

5. I think real estate is taxed much higher than village residences; twice as high in proportion to what they would sell for, and much higher than stocks in manufacturing interests. In this town we have no village or manufacturing corporations, but from my knowledge I am satisfied that any discrimination that has been made has been against the farmer.

6. No thoroughbred stock in town. No particular disease among neat stock.

7. No stock horses in town. Nearly three-fourths of the horses suffered from the disease; only one or two fatal cases. Nearly all have entirely recovered. Not much depreciated in value.

8. No large flocks of sheep in town, ninety-eight being the largest. James A. West owns grades South Down, Cotswold, Leicester, etc. Keeping sheep pays best of any stock. Thirty-one dogs are taxed. About thirty dollars, I think, was paid last year for damage to sheep by dogs.

9. About one-fourth of the area is covered with forests, mostly of more than twenty years growth. The amount of wood and timber is diminishing. The lumber cut here is carried out of town to be manufacture^d. The most valuable timber here is ash

and oak, some pine, spruce and hemlock; but little timber here. We have no special varieties.

10. No particular leading farm crop in town, only as farmers raise, so far as practicable, what corn, wheat and potatoes are necessary for home consumption: but many come mighty short of that.

11. Bridgewater does produce quite a lot of fine apples, Baldwins, nodheads, greenings, russets. The value I am not prepared to give.

12. The demand for farm labor is good, but good help on the farm is not to be had at living prices. One thing must be done soon or farming will be played out in the sterile portions of New England.

The farmer pays twice as much tax as he ought to in New Hampshire; real estate goes into the inventory just the same as money, only money is covered up and real estate is not, only by some. In the State of Connecticut, money goes in at six per cent., real estate at three per cent. Instead of the amendment to the act of invoicing last June working favorably it works unfavorably; some towns have raised ten or fifteen per cent. and made it universal. In those towns where there is a large manufacturing interest real estate has increased very fast, and in the back towns it has decreased in value in nearly the same proportion. Farmers seem very anxious to sell, giving it as a reason taxes are so high and no good help to be had. Most all complain of hard times and high taxes. Something must be done to relieve the farmer from such exorbitant taxation.

BRISTOL.

[Reported by the Selectmen.]

1. There are eighty-five farms in this town about ten of which might sell for \$5000 each; the others will vary in value from \$500 to \$4000. There is no farmer in town, who makes farming his entire business, who makes \$100 per year over his taxes and necessary expenses. There has not been a new farmhouse built within the last ten years. If a farmer makes any money it is by cutting off his wood and timber which find a ready market. The pastures are very poor, and will not support more than half the stock they would thirty years ago. The farmers are more

intelligent than formerly, for the reason that they read more. They have no better houses and but few, if any more, luxuries. Do not think they work so hard, but are obliged to use economy.

2. Four-fifths of farmers' sons leave the farm for trades, etc. About one farm in twenty has been abandoned or merged with others within the past ten years. The reason is that mechanics get more pay for their labor than the farmer. If a person has a trade, he can feed and clothe his family better, give his children a better education, with less hours' labor than he can upon a farm.

3. The fever is not abating.

4. We appraise farms about the same as village residences and stores. Manufactories and capital invested in manufactures are not appraised so high in proportion to their value as other property, for the reason that when we encourage such industries we help the farmer. Farms, etc., are appraised at about two-thirds their cash value. Do not think there has been any intended discrimination in appraisal, except as stated.

6. There is no pure blood neat stock in town. Only three hundred and ninety-eight taxable cattle in town. Much less than in former years, and fully twice the value per head than twenty years ago. No prevailing disease that we know of.

7. Louis Rowe owns what is said to be a pure blood Morgan stallion, no name. Horse disease affected nearly all the horses, last fall and winter. Three fatal cases. There are one hundred horses owned by farmers. No depreciation in value.

8. No sheep breeders in town. Only four hundred and thirteen sheep. Farmers do not keep enough to know whether it pays or not. Eight dogs are taxed. In 1871 about one hundred dollars damage to sheep; in 1872, none.

9. About one-third the area of the town is covered with forests, nearly all young growth. A large proportion of the timber cut is manufactured into boxes, bedsteads, bobbin stock, carriage work, etc. The principal timber of value is sapling pine, oak, ash, poplar and white birch.

10. The leading crops are hay, potatoes and oats. The sources of income are a ready market for all farm products in the villages of Bristol and New Hampton.

11. Several good apple orchards in town; probably average \$3000 in value of products.

12. The supply of farm and farm-house labor is equal to the demand; for each farmer and his wife must do their own work.

CAMPTON.

[Reported by the Selectmen.]

1. In our opinion none are making money because of the very high prices of labor compared with the prices of the products of the farm and heavy taxation.

2. We think after paying the farm labor, seed and taxes, and all necessary expenses, there will be nothing left for interest on the cash value of the farm. We do not think the condition of the farms has improved for the last ten years.

3. About three-fourths of the farmers' sons leave the farm for other pursuits. About one-seventh of the farms in town have been abandoned or united with other farms within the last ten years.

4. We think there are more farms for sale in town at this time, than for any time for the last ten years.

5. We think there has been an effort on the part of the selectmen to appraise property without partiality.

6. Much less neat stock in town than ten years ago. Not much changed in value. No disease had prevailed among neat stock the past year.

7. No very valuable stock horses in town. We think nine-tenths of the horses suffered from the disease last fall. No cases fatal, and their value has not depreciated much, if any.

8. G. W. Keniston and Alonzo Keniston keep the largest flocks of Merinos, and Joseph Cook and Archy Robie keep the largest flocks of long-wooled sheep. Sheep have not suffered from disease. About one hundred dogs are annually taxed in town. Value of sheep annually killed or maimed by dogs from sixty to one hundred and fifty dollars.

9. We think about one-half of the area of the town is covered with forests, about one-eighth is old growth. The amount of timber is diminishing. The lumber cut is principally exported, some is manufactured in town. Valuable varieties, pine, spruce, hemlock, maple, ash and birch.

10. Hay, corn, oats and potatoes are the leading crops. One of the most important sources of income to some of our farmers for the last ten years has been the maple sugar orchards.

11. There is generally more than a supply of apples and some years a large quantity sent away. A few have cultivated strawberries and think it pays.

12. The demand for farm and farm-house labor is greater than the supply.

DORCHESTER.

[Reported by J. M. Fltts.]

1. About two-eighths of the farmers are making money, and six-eighths are making nothing more than a good, comfortable living. The reason is very plain to be observed, because the farms have been run down and have become of less value than when the land was new; and again, there is not enough money invested in seven-eighths of the farms for any person to make money from. A good, comfortable living first, and then profit.

2. The farmer who has a capital of five thousand dollars can make money at farming. I do not think the buildings are as good as they were twenty-five years ago, and of course a very few families have sewing-machines, etc.

3. There is a large proportion of the young men who do not farm, and will not remain on the farm, because they can do better at other business. There are quite a number of farms that no one lives on at the present time, and probably never will again.

4. Is the fever abating? No! New England farms back from the rivers are destined to run out. The farms are every year becoming of less value, and in a few years will not produce enough to support a family; and hence the farmers leave.

5. The farming class of people are taxed more in proportion than manufacturing companies, because their taxable property is all visible, and is taxed almost to its full value, while, for instance, the manufacturing class are not taxed for one-half their value.

6. There is not so much interest bestowed on pure blood stock as there ought to be. The farmers use almost any blood stock that is most handy.

7. No stock horse in town. Farmers depend upon horses traveling through the town for this purpose.

8. Sheep pay well. There is a large amount of property in sheep. Cotswold and South Down bloods seem most to attract the attention of farmers in this section. Dogs do considerable damage in town. There are forty-two dogs taxed this year.

9. Our town has an abundance of wood and timber—enough to last years and years. This business pays the farmer large profits while he is getting it off, and when it is all off, *i. e.*, timber, bark and wood, his farm is almost worthless. We have one steam mill that saws timber, boards, shingles, etc. Twelve other mills

run by water power, and do a large business in the same line. There is prospect of another steam mill in town this year.

10. Farm crops are hay, oats, potatoes, wheat, etc.

11. Apples are very plenty, and are largely manufactured into cider.

11. Labor is enough for the demand, principally American help.

ENFIELD.

[Reported by the Selectmen.]

1. There are but few if any farmers that make anything more than a living and support their families from the actual income of their farms.

2. The farms of this town do not pay any per cent., according to your question; it is true there are those that will, but an average will not do it. The farmers are better off for buildings, machinery for cutting hay, cultivating their crops, etc., than formerly, and have as a class more money at interest and in stock than a few years ago. As to the work, they labor as hard and practice as much economy.

3. Three-fourths of all the young men leave the farms for other employment.

4. The fever runs as high as ever, and will not abate till the cause is removed.

5. Farms in this town have been appraised higher than village residences or stock in trade and manufacturing interests. We are not aware of any intentional discrimination, but from the nature of the farmers' taxable property its full value can be easily seen, while village residences, manufacturing interests, stock in trade, etc., is always difficult to find its real value.

6. Only one lot of pure blood stock in town, that being of the Dutch stock, owned by Levi Champion. Not much change in the number of neat stock for the last ten years, only as it is regulated by the hay crops. We think there is an increase in value of one third. No disease among cattle the past year.

7. We have no stock horses. Three-fourths had the disease last fall and winter, but few died. We think they are not as valuable as before.

8. We have no prominent sheep breeders in town, but those that are keeping sheep think that they pay better than other

stock. Seventy-two dogs are taxed in town. From fifteen to thirty sheep are killed or maimed annually by dogs.

9. From one-third to one half of our town is covered with wood, mostly of small growth, the larger timber being mostly cut. But little cut in town is worked up here, as we use more from other towns, manufactured into pails, bedsteads, rakes, etc.

10. The leading farm crops are hay, potatoes, corn, oats, barley and wheat.

11. We have apples, pears, plums, cherries, grapes, etc., but we have no means of giving the value of the crop per year.

12. Good help is hard to get, both in doors and out, but plenty of poor help is to be had any time.

GROTON.

[Reported by the Selectmen.]

The report is brief but expressive in regard to this town. It asserts that farmers are not making money, for the reason that taxes are so high; that nine-tenths of farmers' sons leave the farm, and there is no prospect of a change; that there is no such thing as equality in taxation; that the town has less neat stock year by year; no disease among cattle; one-fourth of the horses suffered last fall, and are not so valuable as before; that sheep husbandry pays; forty-seven dogs are taxed and no sheep killed; one-third or more of the town is covered with wood growth which is diminishing; potatoes, grain and hay are the farm crops. Little fruit and a scarcity of labor. The selectmen add — A. B. Crosby and D. M. Tenney are two as good farmers as we have in town; they think farming does not pay. There are but very few persons in town but have to resort to other means aside from the farm to be able to get a living. The town is losing in value and people every year. The farmer cannot live and pay all the taxes, as his property is all exposed to taxation, while his rich neighbors live on the interest of their bonds and have no taxes to pay.

HANOVER.

Two excellent reports were presented from this town.

[First report, by the Selectmen.]

1. There are none, we think, making enough money to support their families and pay the interest on their property. Taxes and labor are so high is the principal reason.

2. As to buildings we are unable to answer. There is improvement in a few, but very many are becoming dilapidated and considerable many abandoned entirely. About hard work, as compared with former times, there is not much difference. It seems to be "root hog, or die," any way.

3. As many as six out of seven leave the farm and go into other business. The probable reason is that the farmer is compelled to get more hours' work every day than other occupations, and cannot pay quite as high prices.

4. Is the fever abating? We cannot see that there is any difference as to that. The inclination is to get off the farm.

5. Our intention is to tax equally, but we may fail, in that the farmers' property, or we would say the farm property, is all in sight and easy to appraise, while it is not so easy to get at the value of a stock of goods.

6. There are fifteen or more of the Alderney, claimed to be pure blood. The number of neat cattle has not varied much from last year. The tendency of prices for neat stock is, we think, upwards; that is to say, to take a term of years. No disease that we know of.

7. There is no stock horse kept in town at this time. In regard to the horse disease, we believe that nearly every horse in town had the distemper. Some two or three died with it; all seemed to be weakened by it through the winter. Apparently well now.

8. We have no leading sheep breeders in town. Charles Houston, William Fullington, Elijah and B. Miller, George Dewey and John L. Bridgman are among the best sheep raisers in town. We think that sheep pay better than other stock. Dogs are quite troublesome to sheep.

9. We should think that not more than one-twentieth part of the town is covered with first growth of timber. Perhaps one-sixth is covered with young wood and bushes.

10. The leading crops are wheat, rye, oats, corn, potatoes and hay. Some traffic in wood in the winter.

11. Fruit not very plenty. Some apples, strawberries, plums and grapes.

12. As to labor, it is very high, and quite poor at that.

[Second Report, by the Town Clerk.]

1. Undoubtedly there may be farmers in this town, making money solely by farming. Who they are, I am unable to say. Our best farmers are raising cattle, sheep, horses, corn, wheat, oats, potatoes, etc., without giving special attention to any one object.

2. As an answer to this question I will take our town farm as an example, giving the figures as reported for the last five years :

1869.

Inventory of 1869	\$3,723 41
Inventory of 1868	3,248 63
Excess of inventory in 1869	\$474 78
Received from farm on account of stock, produce, etc., sold	774 48
Total, 1869	\$1,249 26
Paid expenses, 1869	1,199 20
Net gain, 1869	\$50 06

1870.

Inventory of 1869	\$3,723 41
Inventory of 1870	2,441 35
Loss in inventory in 1870	\$1,282 06
Paid expenses at farm	1,669 63
Total	\$2,951 69
Received as income of farm	2,287 70
Net loss in 1870	663 99

1871.

Amount of inventory of 1871	\$2,847 13
Amount of inventory of 1870	2,441 35
Gain in inventory 1871	\$405 78
Received income of farm	1,255 12
	\$1,660 90
Paid expenses	\$1,159 18
Balance Agent's salary	106 00
	\$1,265 18
Net gain 1871	\$395 72

1872.

Inventory of 1871	\$2,847 12
Inventory of 1872	2,031 87
Loss in inventory 1872	\$815 26
Paid expenses 1872	\$612 18
Paid Agent's salary	350 00
	\$962 18
Total expenses	
	\$1,777 44
Received as income	1,786 51
Less expenses	1,777 44
Net gain 1872	\$9.07

1873.

Amount of inventory 1873	\$2,405 36
Amount of inventory 1872	2,031 87
Net gain in inventory of 1873	\$373 49
Produce sold	1,106 48
	1,479 97
Paid expenses	\$682 31
Paid Agent	300 00
	\$982 31
Net gain, 1873	
	\$497 66

GAIN AND LOSS.

	GAIN.	LOSS.
1869, net gain	\$50 06	
1870, loss		\$663 99
1871, gain	395 72	
1872	9 07	
1873	497 99	
	\$952 51	\$663 99
	663 99	
Gain in five years	\$288 52	
Average gain per year	57 70	

One per cent. on \$8000, the amount invested in farm, stock and appurtenances, is \$80, therefore the per cent. profit on the investment, per annum, is 57.70-80 of one per cent. Had the farm paid taxes, as other farms have done, the town would be indebted for the balance.

The town farm is called one of the most productive farms in town. The number of persons supported at the farm has not

been large during the last five years. Some of them have been able to do enough to pay their way. They have not been fed or clothed extravagantly; and I think the figures show that farmers cannot afford to hire at present prices.

3. We have much better advantages for schools than formerly, and we may conclude that as a body farmers and laborers are more intelligent than formerly. I think they generally have more money at interest and live in better buildings than they used to.

4. More than half the farmers' sons leave farming for other pursuits. One farm in fifty has been abandoned or incorporated with other farms during the last ten years. This spring farms are offered for sale at less prices than at any time previous in five years.

5. The selectmen intend to appraise all kinds of property upon an equality. Many think farmers pay more tax, proportionally, than any other class of taxpayers, as their property is mostly in sight. I do not know of any discrimination for or against any class of taxpayers.

6. Several farmers in town own Durham, Jersey, and other blooded stock. The merits of this stock are too well known to merit remark. There is less neat stock in town than in some previous years. Cattle are worth fifty per cent. more than formerly. No particular disease prevailed among cattle the past year.

7. I cannot answer the first clause in this question. Few horses escaped the epidemic last fall. Few cases proved fatal, none that were well handled; they have mostly recovered.

8. The leading sheep breeders are Col. D. Hill, B. D. Miller, E. T. Miller, Wm. Hatch, D. H. Camp, C. Houston, J. L. Bridgman, D. C. Tenney and others, who have nice Merino sheep. Sheep did not suffer by disease the past year. Ninety-three dogs were taxed in town the past year. Our selectmen report \$40 paid damages by dogs in 1872.

9. It is difficult to estimate the proportion of the town covered by forest. Moose Mountain runs through the western part of the town, and though well covered with a growth of timber, still it is so rocky that it cannot be classed with good timber. There may be ten acres to a hundred of old growth timber through the town. Our wood and timber are diminishing quite too fast. A part of it is consumed and manufactured in town, but a large part is exported. We have no special varieties of timber.

10. Corn, wheat, rye, oats, potatoes, etc., are the usual crops. I know of no special crop cultivated in town.

11. All kinds of fruit common to this latitude are raised in town. I have no means of estimating their value.

12. The demand for farm laborers would be greater than the supply, if farmers could afford to hire.

Taking our town farm as a standard, I am fully of the opinion, that a laborer cannot raise more than enough to support himself and pay his wages, on any farm in town, with the use of team and tools thrown in, if he engages to work as he would work for another person. It is difficult to obtain female help. Those who are obliged to work, will, to some extent, but the rule seems to be to get along without doing much, and let "the old man" foot the bills.

HEBRON.

[Reported by the Selectmen.]

1. A very few farmers are making a little money, and they by close economy and hard work.

2. We can give no figures in regard to farm income. The farmers in this town are mostly poor and have hard work to get a living.

3. Fully one-third of the farms are abandoned and turned out to pasture or growing up to bushes. Nearly all the young men leave the farms for other pursuits.

4. About the same.

5. In the assessment of town taxes we are confident that capital invested in farming pays much more taxes than that invested in trade, manufacturing or village residences.

6. No pure blood neat stock in this town. The number of animals is much less than in former years. The value per animal rather greater than twenty years ago. No disease has affected neat stock the past year.

7. No stock horses. Nearly all the horses suffered from the horse disease last fall and winter. Not more than one case in fifty proved fatal. A small proportion of horses recovered. Have depreciated in value.

8. No particular sheep breeders in town. Some few keep about one hundred, and think they pay better than other stock. No particular disease among sheep the past year. No sheep killed by dogs.

9. Nearly one-half of the area of the town is covered with forest, mostly second growth. No lumber manufactured in town. Of valuable trees we have sapling pines, sugar maple, red oak, white ash, birch, beech, hemlock and spruce.

10. The leading crops are grass, corn, potatoes, oats and wheat.

11. Fruits: apples, cherries, blackberries, blueberries, currants, raspberries, etc.

12. Farm labor, male and female, both scarce and poor.

HOLDERNESS.

[Reported by the Selectmen.]

1. I do not think there are any farmers making money solely by farming; very many haul wood or lumber to market to get their money.

2. I do not think farming in this town pays any per cent. Farmers have better buildings than formerly; more conveniences and more luxuries, and are more intelligent.

3. Nine-tenths of the young men leave the farm for other business because farming does not pay. There has been a number of farms turned out to pasturage within the last ten years; the effect is bad for our town.

4. The fever is not abating; we have had a very hard winter which tends to discourage the farmer more than ever.

5. Village property is taxed lower, as a general thing, than farm property.

6. Our stock is mostly native; some are just commencing with the Jersey stock. The value of our neat stock is about the same as formerly. We have not noticed any disease among neat stock for a year past.

7. There are no stock horses in town of much account. About every horse in town had the horse disease last fall. None proved fatal. The condition of horses this spring is about the same as formerly.

8. Nathaniel S. Calley has the largest flock in town; they are natives and South Downs; it is so all over town, they are mixed. Every one thinks sheep pay better than other stock. There are seventy-six dogs taxed in town. The value of sheep killed by dogs is thirty or forty dollars a year.

9. About one-third of our town is covered with forests and mountains and water, I think. There is but very little old growth

in town. Wood and timber are diminishing fast. Our timber and wood are exported. No special varieties of timber in town.

10. Farm crops are corn, potatoes, wheat, oats and rye. Their sources of income are the same as formerly.

11. Nothing but common fruit, apples, and some plums and grapes, berries in plenty, wild.

12. A good farm hand is what you cannot hire very often; farm-house labor is about the same. The most of farmers in our town do their work themselves.

LEBANON.

[Reported by the Selectmen.]

1. To the question, are farmers making money? the almost universal reply is no. Some of the reasons: Labor too high in proportion to prices realized for farm products; increased expense of supporting families, to meet demands of the present times over former years; deterioration of soil, particularly of pasture lands; the tendency of the younger, more enterprising and energetic portion of our farming community to go West or seek other employment.

2. Farmers are more intelligent, live in better buildings, have more conveniences than formerly, work as busily, and are from necessity economical. After making the various deductions agreeable to question, farms will not pay more than three per cent.

3. Probably more than one-half of the sons of farmers leave the farm, for the reason that other pursuits are thought to pay better and give more time for relaxation from back-bone labor. Not more than one-half dozen of farms in town have been abandoned for the last ten years, and such might as well not have been tilled, but rather allowed to grow timber.

4. We do not hear of any farmer this spring proposing to sell out and go West, but believe, notwithstanding the rather discouraging out-look for the future, that farmers, as a general thing, think they cannot do better than to still trust to our Lebanon soil as their banker.

5. In the assessment of taxes, we do not hear complaint of any unjust discrimination between village and farm property; we think that it has been the intention of the present and past assessors to give a just and fair valuation of all property as compared

one with another; neither do we think there has ever been within our knowledge, any discrimination in favor or against either class. In our appraisal, the intention is to place the valuation nearly up to a cash value or forced sale, which would be about equivalent to two-thirds of that realized from a long credit.

6. Samuel Craft, pure blood Durham neat stock, John T. Breck and Joel Baker, thoroughbred Alderney and Jersey. Compared with ten years ago, the proportion of each, cattle and sheep, one-fourth in number less. Horses, one-fourth more in number, superior in quality. No disease affecting neat stock the past year.

7. No prominent stock horse in town; very few horses escaped the disease of last fall and winter; no cases fatal, where reasonable care was taken. Think no depreciation of value in consequence.

8. The only breed of sheep kept in town is the Merino (with the exception of two or three small flocks crossed). The leading breeders of thoroughbred Merinos are John A. Miller, Joel Baker, Enoch Freeman, George Blodgett, Richard Walker, N. B. Stearns, James Wood and Albert Freeman. On account of the better adaptation of lands and the difficulty of securing suitable in-door labor, they keep sheep rather than other stock. Sheep have suffered but very little from disease within the past ten years, with the exception of the foot rot which at times has been somewhat troublesome. About one hundred and fifty dogs are annually taxed, and until the last have not caused much damage. We paid to owners of sheep one hundred dollars for damages to sheep which could be so directly traced to dogs that we felt warranted in paying. There were other cases of damages presented, which probably were the work of dogs, and had they been paid would have taken the whole amount collected from the tax on dogs. Nearly all the depredations were committed in the night-time, so that sufficient evidence could not be procured to collect of the owners of dogs.

9. We estimate that from one-sixth to one-eighth portion of the town is covered with forests; one-half of some old growth. For years past diminished in quantity, but at present increasing, and will continue to increase. Timber manufactured in town for building and furniture purposes. Varieties, pine, hemlock, birch, beech and maple.

10. Hay, corn, potatoes, oats and wheat; winter wheat to some extent with quite good success. Not aware of any particularly new practices. Sources of income arise from wool, beef, pork, potatoes, butter and cheese. Fruit, quite an item; also poultry.

11. Choice varieties of apples and pears, as has been demonstrated at our annual town fairs. As to amount cannot arrive at any reliable estimate.

12. The demand for farm and farm-house labor is greater than the supply; the latter, far greater. Hints—raise more girls; teach them how to work, or resort to the more objectionable means, import.

LINCOLN.

[Reported by the Selectmen.]

1. None; and why there is none is because there is no conveyance to market by rail.

2. The percentage on farms and farmers' stock don't pay expenses. We have no money at interest in our town. Buildings are not so good as they were ten years ago.

3. One-tenth part of what was cleared is growing up to wood. The causes are, labor is scarce and young people leave.

4. Farmers are^{are} more inclined to leave their pursuits than heretofore.

5. Farms and stock are taxed at their cash value.

6. No pure blooded neat stock.

7. No stock horses owned in town. All horses had the distemper last fall, but none died.

8. Do not think it pays to keep sheep, for bears kill them. Eight dogs in town. No sheep killed by dogs.

9. Nine-tenths of the town is covered with forest, most all old growth. Timber is diminishing. Lumber cut in town is exported. The wood consists of maple, birch, beech, spruce, hemlock and pine.

10. The leading crops are oats, potatoes and corn.

11. Common fruit.

12. The demand for labor is good, but there is not a supply.

LISBON.

[Reported by the Selectmen.]

1. There are but few farmers that are making money in this town. Those that are, do it by raising potatoes and hops. Those that are not, fail to do so on account of having too much land under cultivation, and doing their work in too slight a manner.

2. The per cent. farm capital pays. Cannot give you the exact figures. Farmers are, as a body, on an average for intelligence, and live in as good buildings, in fact, better than formerly, and have more conveniences and luxuries. They have more money at interest. They don't work so hard as formerly.

3. A large proportion of sons of farmers leave the farm for trades and commercial pursuits, that they may have less labor and more independence. The effect is to fill our villages and towns with loafers and produce scarcity of farm help.

4. We appraise farm property at its cash value, also village property the same in our judgment. There has been no discrimination in the appraisal of property.

5. There is no pure blood neat stock in our town. The amount and value are rather on the decrease. There has been no disease to affect neat stock.

6. There is one horse used for stock, owned by Hiram Noyes, (Morgan blood,) for farm stock—a good strong limb and powerful horse. About ninety-nine hundredths suffered from horse disease; no fatal cases, but a depreciation of value of about five per cent.

7. We have no sheep breeders in town, but those who do keep them think they pay better than other stock. Sheep have not suffered from disease to any extent. There are one hundred and twelve dogs taxed in town. The value of sheep killed and maimed by dogs is about sixty dollars per year.

8. About one-half of the area of town is covered with second-growth forests. Our lumber and wood are cut and manufactured in town. It is manufactured into kits, bobbins, shoe-pegs, and boxes for packing. For valuable varieties we have pine, spruce, hemlock, birch, maple, ash and oak. We have no special varieties not common to other sections.

9. The leading farm crops are potatoes, hay, hops, corn and oats. Know of no new practices which are valuable and that have been adopted by the farmers.

10. There is no fruit raised in town except apples, and those not to any great extent.

11. There is a large demand for farm labor, both male and female. The reason is given in Answer 3.

LITTLETON.

[Reported by John W. English.]

1. There are no farmers making money in this town solely by farming. There are a few farmers having money at interest that pay their bills and save the interest on their money (not on the capital invested in that business). Quite a number of very comfortable farmers have not been able to pay their taxes of last year, and their farms are advertised to be sold for the non-payment of the same. If farmers are not making money, why? There are various reasons: the long continued drouth of 1870 and 1871 had the effect of reducing the stock of neat cattle and horses in town nearly one-fourth, and crops in proportion to stock; another reason is, and a very serious one too, the exorbitant prices the farmer has to pay for labor, \$25 to \$30 dollars per month and board for the season, consumes about all that many of our best farmers have, after paying their taxes.

2. Farmers are not getting one per cent. on their capital invested in farming pursuits. Those having money at interest are living in better houses, ride in better carriages; and this class of farmers are growing richer at the expense of the much larger class who are paying interest. The last named class are much the most numerous; the high rate of interest exacted by capitalists is eating like canker upon the capital of the farmer, and is equally as fast enriching the latter. They are, as a body, more intelligent than formerly, and are working harder.

3. The proportion of sons of farmers leaving the farms for other pursuits, three out of every four. The proportion of farms abandoned or united with other farms within the last ten years, about one in forty; they are mostly caused by being in bad locations. The effect upon the town is, of course, damaging. The total valuation has been on the increase. The village property has increased more in valuation than the farms have depreciated.

4. Farmers are more inclined, I think, to leave their farms this spring than usual. The many that would be glad to engage in other pursuits cannot find purchasers for their farms. Some are

letting their farms, others would be glad to, but the larger part of them have hopes that something better may turn up for them.

5. We appraise farms about equal in proportion to their cash value with village property (that is real estate). The farmers, cattle, sheep and horses are appraised much nearer their cash value than stock in trade or manufacturing interests. Stock in trade has not been appraised for more than one-third its cash value. The farmers' stocks are appraised for more than three-fourths of their real value.

6. There are but few cattle in town claimed to be pure blood. Farmers generally believe that a cross of the native and imported stocks is more profitable than pure bloods. The value per animal is less than five years ago; it is higher than twelve years ago.

7. There are no stock horses of any note owned in town. There were but very few horses that escaped the disease last fall and winter. There was but one fatal case. I find in taking the inventory that quite a number of horses have not recovered from the disease. Those that have not recovered are said to be weak, sweat easier than they did before having the disease, besides an unnatural breathing; there are but few cases of this kind; should judge that nine-tenths of the horses have fully recovered.

8. This is not much of a wool growing town. There are no fine wooled sheep kept here. We have the native, the Cotswold, the South Down and the Leicester breeds. Forty-five is the largest number that I found in any one flock; they are owned by A. E. Towne. Sheep have not suffered from disease the past year. We taxed one hundred and twenty-eight dogs. There is generally about damage enough done to sheep to cover the dog tax.

9. About one-third of the land in town is covered with forests. About two-thirds of it is old growth. The wood and timber is diminishing; I should judge that three hundred acres has been cut over the past winter. Much of the large portion of timber cut in town is exported. There is about three hundred thousand feet made into boxes, annually, and perhaps from seventy-five to one hundred thousand manufactured into doors, sash and blinds. The valuable varieties are pine, spruce and hemlock. The maple is generally preserved for sugar making.

10. The potato crop is considered as sure and as remunerative as any one crop raised. Hops are considerably cultivated and

pay better than any other crop, when there is a fair demand for them. As to the sources of income, there is nothing neglected here that is raised in other towns in Grafton County.

11. Fruit is not extensively cultivated; the most of the hill farms produce enough for home consumption, say apples, plums and cherries; no pears or peaches of any account.

12. The demand is beyond the supply for farm labor and farmhouse labor. Men are asking thirty dollars per month (good hands), and it is of little use to ask a good girl to work for less than three dollars per week. There are no hints that we can give in this matter; manufacturers pay more for labor than the farmer can afford to, therefore they hold all of the best help, and there is but little left for the farmer to hire but such as the manufacturer won't have.

LYMAN.

[Reported by the Selectmen.]

1. There are very few that are making any money by farming, at the same time keeping their farms in as high state of cultivation as when they began, and supporting their families. Taxation, the high price of labor, and the extravagant manner of dressing and living are the impediments generally for not making money.

2. Our belief is, from what information we can obtain, that farmers are not as well off now as ten years ago. As a whole their buildings and fences are not nearly as good, and their farms are not in so high state of cultivation. The growth of stock and wood is probably about the same as in other farming towns. Our farmers are so discouraged that they make but little permanent improvements as they think it does not pay. The farmers generally are not as well off as the merchant or the mechanic, as goods of all descriptions are high, and the labor of mechanics is excessively so. It is impossible to give exact figures relative to incomes, but our judgment is that farmers' incomes, as a class, are merely nothing. It does not appear to us that farmers as a whole have improved very much in point of intelligence in the last twenty years, and generally their buildings are not as good. They have only about half the money at interest that they were taxed with twenty years ago. We do not think farmers generally work as hard.

3. Full two-thirds of our young men when of age leave

farming and engage in other business. Nearly one-quarter of the farms have been turned to pasturage or sold and connected to adjoining farms, and the buildings removed or rotted down, in the last ten years. Mining has been the main cause, and thus far has had a bad effect upon the prosperity of the town; for this reason, it has nearly ruined quite a number of large farms that twenty years ago kept large stocks and furnished large inventories that now are merely nominal.

4. Farms are for sale in all parts of the town; those that sell engage in other business, or go West or South thinking to better their condition either by farming or other speculation.

5. We hardly know how property is prized in villages as we have no village. We have but a small portion of manufacturing. So far as our town is concerned we prize all interests as nearly equal as possible, intending to do justice to all.

6. There is no pure blood neat stock in our town, and there is a falling off in the last ten years of nearly one-third in number. The value of each animal is about the same. There has been no malignant disease for the past year except now and then a case of what we term black leg.

7. There are but two stock horses kept in town, one is of the Morgan blood, the other is half French Morrill and half we term native blood, both very good stock horses. Nearly two-thirds of the horses and colts had the disease last fall and first of the winter, but the number that died was quite small. Some show but little depreciation in value, others seem to linger along and require nursing, and undoubtedly will until turned to grass. To what extent value is diminished it is impossible now to determine.

8. There are no leading sheep breeders in town, and not one-half the sheep kept there were ten years ago. The breeds are South Downs, Cotswold, Irish mixed with the large-sized heavy-wooled Merino; our farmers generally keep a portion of each, so that if one fails to pay the other may. Dairy business is carried on to considerable extent in town, and some of our farmers think it pays better than sheep. There are forty-five dogs taxed this year. The value of sheep maimed and killed will not exceed annually twelve dollars.

9. Full one-third of the town is covered with what would be termed forest. But a small part is old growth. The amount of timber is rapidly diminishing. The most of the lumber is manufactured in town, into plank boards, clapboards and shingles. The

kinds of timber are second-growth white pine, hemlock, spruce, rock and white maple, yellow and white birch, red oak and poplar.

10. Wheat, rye, oats, peas, buckwheat, corn, beans and potatoes, neat stock, sheep and lambs' wool, horses, butter, poultry, eggs and pork, all kinds of grain, and potatoes for starch.

11. There is but little fruit raised in town. Apples are the leading fruit and those not very plenty. We also have cherries, plums, strawberries, raspberries, blackberries, currants and gooseberries.

12. The demand for farm and farm-house labor is great. There is a short supply of each, but full as much as the farmers and mechanics can find means to pay for, as it takes all they have to spare to pay national, state, county and town taxes, and unless there is a great reform in all such expenses the farmer and laboring class of our country will soon become bankrupt together.

LYME.

[Reported by Charles Kent.]

I do not think any farmer is making money from the products of his farm, unless he has sufficient help to carry it on, and very few at that. The majority of the farms will not pay any per cent. on the capital invested. Very little fertilizers used in this town.

The taxes are very high, nearly three per cent. this year.

The buildings have not been much improved, the last ten years. The expense of living and educating our children is more than in years past. In comparison to the mechanic and tradesman, the tradesman is continually turning his capital, while the farmer labors some six months in the year to furnish food for man and beast, and spends the other six months of the year in eating and feeding out his products to his stock, what he has raised on his farm, and frequently at the end of the year the valuation of his stock has not increased to any amount.

It does not seem to me that the intelligence of the farming class has improved to any great extent, as most of our young men of enterprise leave the farm for some other business.

We live more expensively, have more luxuries, for which we have to pay more in proportion than we receive from the products of the farm. The laboring class is very industrious, but I think man cannot perform the labor at the present day that has been

done by generations before us. The proportion of sons of farmers that are leaving is strong on the majority.

Nearly one-fourth of the farms, I should judge, have been abandoned, within the last thirty to forty years. The supposed cause is that the hard, rough, stony soil is exhausted; it is all worn out. Crops will hardly pay for the seed, time and labor all thrown away. Young men of any enterprise cannot be induced to remain on such soil, and fathers get disgusted at the products of their labor, and surely leave such land. The fever is not abating. As one man remarked to me a short time since, "Dorchester is creeping over the eastern parts of our town fast." But again, on our best farms on the river and in some other localities, the farmers are prospering as well as could be expected, taking all things into consideration.

When the inventory was taken, many of the farmers thought their real estate was appraised too high, far more than they could sell it for ready cash. From the best information that I can get, the real estate is valued higher in our town than in the cities and villages, in proportion to what it sells for. We intend to appraise the real estate somewhere near what it will sell for, cash down.

There is not much pure blooded stock in town, except sheep. I suppose there are some farmers who think they have good blooded sheep, as good as can be found in the State. The number of cattle and horses does not vary much from years past.

The number of sheep has decreased nearly one-half in the ten years.

No stock horses in town. Most every horse was affected with the disease last season. Not many died.

I will give you the names of a few of the farmers who keep the best grades of sheep: W. H. Dimick, John Derby, Lewis S. Derby, F. W. Baker, B. F. Gilbert, John L. Norris, A. T. Colby, and some others. Those and others think sheep pay the best of any stock they can keep. There are between seventy and eighty dogs taxed in town. Very little money has been drawn from the treasury for damage to sheep by dogs.

There is considerable wood in town, but mostly of small growth. No pine of any amount; some hemlock and spruce. The pine has all been carried away to be manufactured; other lumber manufactured into boards and then shipped. Hard wood mostly worked into chair stock by Tillotson & Co., by steam, and then shipped.

The leading crops are hay, corn, oats, potatoes, and some wheat on high land.

Not as much attention paid to fruit as in some sections; apples are the main product.

The demand for farm labor is more than the supply; both farm and farm-house labor are very scarce. Farming cannot be carried on in so thorough a manner as it should be on account of the scarcity of labor and the high price paid; so any one will readily see that a great deal is left undone in the way of improving the farms that would be done if the case was different. The land that can be worked with improved machinery is the land that gets the attention, and is somewhat improved; other land will be neglected and grow wood in due season.

MONROE.

[Reported by C. B. Paddleford.]

1. The general answer to the first question is *no*.
2. No one in town keeps an account. Farmers are more intelligent, live in better buildings, have more conveniences. About the same money at interest as ten years ago. Do not work as hard; not as economical.
- 3 and 4. Sons of farmers about all leave the farm. No farms have been abandoned. The desire to leave still continues.
5. In each class of taxable property it is the intention to appraise at its cash value.
6. No pure blood; about the same as former years. No disease.
7. About all horses suffered from the disease. None died. It is the general opinion that horses are not as sound as they were before the disease.
8. About all keep sheep; from twenty to one hundred, all coarse wool. No disease. About thirty dogs taxed. From fifteen to twenty-five dollars damage done.
9. About one-third old growth. Diminishing. Wood and lumber manufactured for home use.
10. General varieties of farm crops.
11. Little fruit.
12. Farm and farm-house labor is very scarce.

ORANGE.

[Reported by the Selectmen.]

1. There are but a few making money, aside from what is required for a good living.

2. The per cent. farm capital pays is very small, if any, generally speaking, although farmers have more conveniences and better buildings than formerly; they have more money at interest than at any time heretofore.

3. About one-half of the young men leave the farm for more lucrative business. The reason is that their pay is better.

4. There is but little difference.

5. Our town has to pay full its share of taxes, as our valuation is higher than the towns will average through the State.

6. We have no pure blood neat stock in our town. The number is more than formerly and of better quality.

7. There is no stock horse in town. About one-half of the horses suffered from the disease, but none died with it, to our knowledge.

8. There are none in town who claim to be sheep-breeders, but nearly all keep a few. No disease the past year. We are happy to say that dogs are on the decrease.

9. About one-half of the town is in wood, and we think that the wood and lumber are less and growing more so every year. This is caused by outside parties coming from other towns, with steam mills, sawing the lumber into boards and dimensions, and exporting the same. Our woods are composed of spruce, hemlock, pine, oak, ash, maple, birch, beech, poplar, etc.

10. Farm crops are hay, potatoes, wheat, oats and corn.

11. We have a small amount of fruit, composed of apples, strawberries, blueberries and blackberries.

12. There is a supply for all help in town, except some that are employed in our steam mills.

ORFORD.

[Reported by the Selectmen.]

1. A very few, if any, are making money — those who are have the best of farms and do the most of the work themselves and with machinery.

2. Capital, invested in real estate with the deductions stated, does not pay over three per cent. Farm buildings and conveniences somewhat better than formerly. More money at interest and in the savings banks than formerly. Farmers work no harder and are no more economical.

3. From sixty to seventy-five per cent. of farmers' sons leave the farms. Ten per cent. of the farms have been abandoned within ten years, owing to the location and barrenness of the soil and high prices of labor, and in most instances has not injuriously affected the prosperity of the town.

4. The poorer farms are still being left.

5. The intention is to appraise each class of property at its true cash value, and no discrimination is made in favor of or against the farmer.

6. No pure blooded stock owned in town. There is but little variation in number or value of cattle in the last four years. No disease has affected neat stock the past year.

7. Ninety per cent. of all horses in town were affected more or less with the horse disease last fall and winter. Very few fatal cases. Horses mostly fully recovered and have not depreciated in value.

8. Asa B. Palmer, Parker Wright, Eben Gay, Jesse Carr, Col. John Haselton, Benjamin Franklin, Edwin Ford, Hazen E. Carr. Samuel R. Morrison breed grade Merinos, except A. B. Palmer's which are full blood. Have been unusually healthy. Eighty-four dogs taxed for 1873. The annual value of sheep killed by dogs is about twenty-five dollars.

9. About one-third area of town is covered with forests, mostly old growth, which is diminishing rapidly. Mostly exported, consisting of spruce, pine, hemlock and some maple, birch, ash and oak.

10. Corn, wheat, oats, hay and potatoes, are the leading crops, hay standing at the head. The main source of income to the farmer is the growth on stock and sale of wood.

11. No fruit except grapes, by Dr. Willard Hosford and Asaph Warren, besides apples.

12. The demand for farm and farm-house labor is greater than the supply.

PIERMONT.

[Reported by John D. Martin.]

1. Farmers are not making money, except when they can do their own work.

2. The per cent. on farm capital is small, not half what the money-lender gets. Farmers have better buildings and more conveniences.

3. Two-thirds of the young people leave the town, because they can get more money in other business.

4. The desire to leave does not abate.

5. Design to be equal in appraisals.

6. The stock consists of native and grades; is very fair, and has been somewhat improved.

7. Nine out of ten horses had the disease last fall. No fatal cases. It is said that forty in one meadow escaped attack.

8. Sheep are profitable; those kept in town are Merinos.

9. It is estimated that one-third of the town is covered with wood.

10. The common crops only are produced.

11. Apples are the only fruit of importance.

12. Labor is scarce.

PLYMOUTH.

[Reported by the Selectmen.]

1. A small majority are making money by strict economy and industry.

2. Farmers in general have better buildings and more conveniences than formerly.

3. Ninety per cent. of farmers' sons leave the farm for other pursuits.

4. Farmers are usually in good spirits and trusting in the power of the soil to compensate their efforts.

5. In the assessment of taxes the appraisal is intended to be equal, but without doubt bears harder on farmers, as all their property is visible; whereas, stocks of manufacturing interest and merchandise are not so easily reached.

6. There is not any pure blood neat stock, but mixed grades. Amount less than in former times. Value perhaps as great and quality better.

7. Joseph Clark has a Morgan horse; G. W. Little, Allen stock. Nine-tenths suffered from disease last fall and winter. Three horses died from disease.

8. Seventy-six dogs in town. One hundred dollars paid for sheep killed by dogs last year.

9. One-third of the town is covered with old and second growth of forest. Wood and timber are, without doubt, increasing.

10. Hay, corn, oats and potatoes.

11. Apples are the principal fruit.

12. The demand for farm and farm-house labor is not great, but good for other occupations. The reason to be given is that farm labor is not quite as popular and pays perhaps less, and sons and daughters are somewhat unwilling to follow in the tracks of father and mother.

WARREN.

[Reported by Ira Merrill.]

1. Few are making money, but generally they are neglecting their farms.

2. The per cent. farm capital pays is very small. Buildings are not kept up properly, but are better furnished than formerly.

3. Three-fourths leave because there is too much hard work and too little money at home.

4. This state continues to be the same.

5. The same old story is told about taxation. No exemption for farmers, while other property is covered.

6. No blood stock; not so much as a few years ago. No disease.

7. One-half the horses had the disease last fall. None died and there was no real loss.

8. There are some sheep, which are profitable. Dogs taxed, sixty-seven; not enough to pay loss on sheep.

9. One-half the town is covered with wood, which is diminishing rapidly. Much is worked up in town by mechanics.

10. There is a good market for all the farmer grows. His chief products are the common crops.

11. Not much fruit.

12. Labor is hard to get.

WENTWORTH.

[Reported by S. B. Burnham.]

1. Farmers are supporting their families, and that is about all they can do.
2. They have more money than formerly, work less and are not so economical. Cannot say what farm capital pays. It is small.
3. Only a few young men stay on the farm. More money in other pursuits. One farm in thirty is abandoned.
4. The desire to give up farming still exists.
5. The old story of taxation may be repeated here.
6. Less neat stock but better. No diseases.
7. The "Wentworth Boy," owned by Caverly, is a good stock horse. One half the horses suffered from disease last fall.
8. Sheep have decreased; a few coarse wools are kept and are profitable. No damage by dogs. Sixty dogs taxed.
9. One-half the town is in wood, which is cut and worked up and sent away.
10. Common crops only.
11. Apples.
12. Labor not easy to obtain.

COOS COUNTY.

COLUMBIA.

[Reported by S. J. Bailey.]

In reply to your inquiries with regard to agricultural interests, I can say but little for this town. We are "small potatoes" any way. Still, as a farming community, that is all we are.

Our soil cannot easily be beaten for productiveness, and many of our farmers are making money solely by farming, if anything, for that is our whole business. They, at the same time, are not only keeping up the value of the farm, but increasing the value. Indeed, I cannot see how any farmer can make money solely by farming, and at the same time have the farm run down, except, perhaps, for a year or two, by cutting and selling the hay, when after that he must be losing.

Cost of labor for men by the season, some eight months, from

eighteen to thirty-five dollars per month; females, two to five dollars per week; cost of commercial fertilizers, very little, not so much as formerly. Some few are using Bradley's superphosphate. I have tried it, but cannot see the money back. I think on some soils, however, it may be beneficial. Mine is an old farm, and I am satisfied that lime would be worth much more; I have proved it to be so. Others might think differently. Amount of taxes for 1873, \$2.50 on \$100.

I think that farmers as a body may be more intelligent, live in better buildings, have more conveniences and luxuries than formerly. Think they are less economical, and work ~~no~~ harder.

Farmers' sons are too much inclined to leave the farm. Anything but work on the farm.

Only two farms have been abandoned to pasturage within the past ten years. Farmers have the same confidence in the power of the soil this spring as usual.

In the assessment of town taxes we appraise farms higher than any other class of real estate. We appraise, for 1873, farms at a fraction over three-fourths their cash value; and, by the way, this has increased our valuation largely, and has been done in conformity to the law of last June. This will, in due time, increase our State and county tax, unless other towns do the same, and to the same extent, which, in many cases, they have not done. The inequality must be removed in justice to us. There has always been a discrimination against the farmer on the part of appraisers for taxation.

No pure blood neat stock in town. No cattle disease here this spring, or within the past year.

Nine-tenths of the horses suffered from the horse disease last fall, but I heard of no fatal cases. I think those which recovered, in some cases, have a cough.

The best sheep are kept by Royal W. Jordan. They are very fine. I appraised ten of them at eight dollars per head, the remainder at four dollars; Cotswold and Leicesters. Sheep pay better than any other stock; suffered very little from disease. There is more interest in the improvement of sheep than any other stock in town. Twenty-nine dogs taxed here; the damage done by dogs to sheep is much less than the number of dogs.

Perhaps two-thirds of the area of the town is covered with forests, cannot tell exactly; nearly all old growth. Amount of wood, and especially timber, is fast diminishing. In five years

from this time, at the same rate it has been cut for the last five years, there will be no available timber in town. Nine-tenths of it is exported. Spruce is the most used for timber. Very little pine here. Rock maple, birch and beech for wood. Birch and beech are much used for floor boards.

The leading farm crops in town are potatoes and oats, mostly potatoes; very little wheat. Hay is exported in considerable quantities. Cheese-making is nearly gone up; butter is thought to be much more profitable. Cattle are raised for the market and are a large source of income.

No fruit here of any account, except berries common to the fields.

The demand for farm and farm-house labor is great; not an adequate supply. Almost impossible to find a good servant girl. The reason is that boys and girls are *twenty-one* now at about fifteen, and too good to help even their parents, much less to work for anyone else. Base ball for the boys, and pianos for the girls — father and mother can do the work.

DALTON.

[Reported by the Selectmen.]

1. Although farming is almost the sole occupation in Dalton, there are but few farmers who increase their capital year by year, from the avails of the farm; and they have mostly made money from hops, or potatoes for starch; but as a class, we think farmers are not making money.

2. There is no farm crop that, estimating all expenses at their actual amount, including taxes and interest on value of land, cost of seed and fertilizers, so as to leave the ground in as good condition as found, that will not run the farmer in debt, unless it is hops, in some exceptional year when they bring a high price. We have known farmers to realize a large per cent. on the outlay in raising hops, but they are so uncertain a crop to raise, and the price varies so suddenly and continually, that we consider the business as among the most precarious in which the farmer can engage. In regard to incomes, we know of no farmers who keep an exact account, but think the incomes are mostly —.

3. We cannot give exact figures in regard to this, are certain that the majority of them do leave the farm and engage in other pursuits. The reason for this is partly because farming pays so poorly that when a young man attains his majority, his parents are unable to give him anything to start in life with, except good advice, and he cannot command sufficient capital to start in a farming business, while to work out on a farm combines hard work with less pay than the mechanic gets for the same amount of muscle and brains. In other words the mechanic is better paid for his work, and the excitement of city or village life forms a pleasing contrast to the monotony of the farm. We cannot tell the proportion of farms abandoned or joined with other farms within ten years, but know there is a tendency in that direction. We are personally acquainted with a number of farms that formerly yielded large crops, that now will not pay for cultivating, and are growing up to forest, or are in pasture yielding but scanty herbage, and that mostly weeds. The cause of this is partly, at any rate, owing to the wrong mode of culture pursued, and the fatal policy of extorting everything possible from the soil and selling it, and making no return to the soil, and when it became too poor to grow India wheat it was turned to pasture or abandoned. We think that farmers are making a better return to the soil than formerly, simply because they are obliged to.

4. We do not know as there is any material change in this respect, nor think there soon will be.

5. We think the farmers, as a class, pay more than double the taxes, in proportion to what they are actually worth, than any other class, for the reason that farm property is all exposed for appraisal and taxation, while a trade or profession, for obvious reasons, cannot be so appraised. And, again, most of the farmers do not own their farms and stock clear of debt, but pay taxes the same as if they did. We do not think any discrimination has ever been used; the results are such as have been produced by the nature of the case.

6. We know of no pure blood stock in town. The price of cattle runs higher than before the war.

7. No stock horses kept in town, nor any particular disease, either of horses or cattle, has prevailed. No fatal cases of the horse disease last fall.

8. We think there are no full blood sheep, of any breed, kept in town. There are some grade Merinos and Cotswold. Sheep

have been thought to pay as well for several years past, and perhaps better, than any other stock. There were sixty-three dogs taxed in town for the year 1873, and the town has paid damages every year for sheep killed by dogs, while quite a number are undoubtedly killed, of which proof is lacking. We should think the value of sheep killed would exceed one hundred dollars annually.

9. More than one half of the town is covered with the original forest, and perhaps ten per cent. of the remainder is covered with second growth. The timber suitable for manufacturing is diminishing rapidly, and at the present rate of consumption five years will see the last of it. The lumber cut in town is principally used for railroad ties, or sawed into boards, plank, dimension, stuff, and other building material, and sent to market by railroad. Valuable varieties are pine, spruce, hemlock, maple, beech, birch and cedar.

10. The leading farm crops are hay, corn, oats, wheat, potatoes and hops. The farmers plow deeper and cultivate better, keep more and better stock, have better buildings, use better tools, etc., than formerly.

11. Nothing worthy of mention is done in the fruit line. A few apples are raised, mostly natural fruit, and the trees are poorly cared for.

12. The demand for labor in the summer season is greater than the supply, and the price of labor greater than the prices of farm produce will warrant the farmer in paying. We have to depend on foreign help partially.

DUMMER.

[Reported by the Town Clerk.]

Why our selectmen did not reply I do not know, but our town clerk was sick for a short time and departed this life, and since, I have been appointed. This accounts for the non reply from town clerk.

I think it will be impossible for any farmer in our town to tell at present, for every man who has life and energy enough to farm has more lumbering business in the winter than he has farming in the summer, and his interests are so connected that he does not keep accounts to tell which business pays.

JEFFERSON.

[Reported by N. R. Perkins.]

1 and 2. There is a large per cent. of our farmers that have made money, in the last ten years, by farming. They have improved their farms and fixed up their buildidgs and have more money and luxuries and are educating their children better than before.

3. Don't know of any farms that have been abandoned or united with others.

4. Don't know of any change.

5. It is the intention to appraise all property in town equal and according to law.

6. No one in town except myself is raising pure blooded neat stock. I am raising the Short-Horns in a limited way, pure blooded. The neat stock is improving much in town.

7. No stock horses of any value owned in town. The most of the horses in town were sick last fall, but recovered. Don't know of any that died, of any value.

8. There is no one that makes sheep breeding a specialty. Most every farmer has a small flock. E. S. McIntire has the largest flock of any one, some over one hundred; he gets Cotswold bucks usually and mixes with the old native, making strong and healthy sheep. Others use South Down; I prefer these for mutton. Seventy-five dogs taxed. About thirty dollars for damages.

9. More than one half of the town is covered with heavy forests, mostly pine, spruce and hemlock, with a mixture of hard wood.

10. The leading crop has been potatoes, for starch. There are five starch mills in town.

11. Not much fruit raised here of any kind.

12. I meet more persons inquiring after help than I do after work.

Jefferson is very pleasantly located on the northwest side of the White mountains and affords some of the best views of any town in the mountain region. There are two hotels now, and one more going up this season. Several farmers have fixed up their houses and take mountain travel to board, which is a source of much income. On the whole I think the town is improving very much.

LANCASTER.

[Reported by the Selectmen.]

1. A few farmers are making money by farming solely.
2. Farm capital pays about four per cent. Farmers live better, are more intelligent, have more luxuries, better buildings, more money at interest, do not work harder, and are no more economical than formerly.
- 3 and 4. About half the sons of farmers leave the farm. No farms have been given up, and there is no prospect of a change in either respect.
5. In taxation the selectmen mean to be impartial.
6. B. G. Towne and W. D. Weeks have Short Horns and George M. Stevens has the Dutch.
7. George M. Stevens owns the "Danville Boy" and George H. Walker a "Len Rodgers" horse. The disease was common, loss small.
8. A few own sheep, some are large owners. Loss per year by dogs, \$130. One hundred and twenty-seven dogs taxed.
9. Potatoes, oats and wheat are the common crops.
11. Apples and common wild fruit.
12. There is a demand for good help.

DISCUSSION BY THE FARMERS' CLUB.

The Farmers' Club discussed in part these questions, and among other opinions expressed the accompanying:

Mr. Way took up question first. He could give only his own experience as to the profitableness of farming. He was not making money besides supporting his family, and knew of none who were. There had been better times, as during the war, when the occupation paid well. Real estate then rose rapidly, and those buying and selling cleared good profits. These now had money at interest; taking their interest money in connection with their business, they were making money; but where they were depending solely on their occupation they were not.

Mr. R. C. Lucas considered question second. When capital invested, improvements, wear and tear of tools, taxes, and everything were considered, farmers were not making money. To get a correct estimate it would be necessary to take the results of four or five years together and average them. Last year was unfortunate, and his income fell short \$100, reckoning six per cent.

on his investment, and allowing nothing for his own and his wife's labor, or for what was brought into the house. If a young man should start in farming at twenty-one with \$2000, after ten years of hard labor he might have added to it \$1000. Should he invest it at eight per cent. and allow it to accumulate, by the time he was fifty-three years old he would be worth \$32,000. Farmers could not make money like that. They are oppressed by taxation, which grows heavier and heavier each year, and they must engage in outside occupations to sustain themselves and earn money to pay their taxes. Everything at last has to come out of the agriculturist. Mr. Lucas also alluded to many extravagances that farmers were obliged to pay for, from which they derived no benefit whatever.

Mr. A. P. Freeman did not like to hear farmers talk discouragingly of their occupation, and thought, while the last year might have been unprofitable, take a series of five years or ten years together, and it would not prove so. He gave some very interesting statistics of his last years' experience. He had seven cows, from which he sold 1,382 pounds of butter, at 30 cents per pound, making \$414.60; seven calves, which brought \$49.50; 100 pounds of cheese at 17 cents, \$17. Total from his cows, \$481.10. They had no extra feed, save two quarts of meal per day, from time of coming in till going out to grass. He also had 24 sheep. From 22 of them he sold wool amounting to \$66.43; and lambs, \$31.50, having four left. His income from the same the previous year was \$160. The outgoes on his stock he could not give. He sold last year \$400 worth of stock, and bought to the amount of \$200. He thought that come to reckon everything, Mr. Lucas was about right. The interest on his capital invested, at six per cent. was upwards of \$420. In his estimates he allowed nothing for his grain and other miscellaneous products sold, neither for labor nor household expenses. The balance in favor of his farming would be very small, if anything.

Mr. Spaulding thought farmers had reason to complain that trader's stock on hand was not taxed as heavily as their own. The farmers' property was always visible and taxed at full value, while the merchants' property, or much of it, was not rated at more than two-thirds of its actual cost. The appraisal was generally against the farmer.

Mr. Grant spoke of the "middle men," and how they injured the agriculturist. The products of the farm went through

several hands before they reached the consumer, who had to pay fifty, seventy-five and one hundred per cent. more than the farmer received, who got no profits, while the "middle men" had them all. The same was true in regard to the farmers' purchases; he had to pay several profits on what he was obliged to buy. Hence he got no profits on his own products, and had to pay all the profits on things he must purchase. Farmers must unite and act together in the protection of their own interests.

To sum up the discussion, while it was the unanimous opinion that the past year farming had not been profitable, yet, take the last ten years together, it had paid well; that to get at a just conclusion on the question the average of several years together must be taken; that their property was increasing in value, and that they must economize in hired labor.

NORTHUMBERLAND.

[Reported by Robert Jacques.]

1 and 2. It is difficult to tell how much money farmers are making on their farms, for the reason that they engage in all kinds of work, and often do not work* intelligently, and more often without system or object. That the farm will pay is certain, but it must be well managed and thoroughly worked.

3 and 4. Think one half the farmers' sons leave the farm, and this practice still continues. No farms are abandoned, for nearly all are new and productive.

5. The farmer labors under disadvantages, for his property is all open and cannot be concealed.

6. There is some good stock, and some pure bloods, Ayrshire and Jersey.

7. All horses had the distemper, none died, and all appear to be well now.

8. The Leicester, Cotswold and Merino sheep are kept.

9. A large proportion of the town is in wood, which as yet has not been reduced by the lumbermen.

10. The farm crops are wheat, oats, grass and potatoes.

11. No fruit.

12. Good help is not abundant.

PITTSBURG.

[Reported by the Selectmen.]

1. From the best information we have been able to obtain, there are comparatively few if any farmers in town now making money, owing chiefly to the high prices they are compelled to pay for labor, both indoors and out, and also the heavy taxes they are compelled annually to pay; particularly our county tax, which is enormous.

2. The percentage on the farm capital invested is not more than three per cent. after allowing a fair compensation for the labor of the farmers and families, and deducting the necessary expenses for labor, seed, wear of implements, taxes, repair of buildings, etc. Farmers are not any more intelligent, neither do they live in any better buildings, with one or two exceptions, than formerly, and a large share of the buildings are not so good. There is not so much interest money assessed as formerly. Yet farmers work as hard as ever and are full more economical. But high prices for labor and heavy taxes, have reduced the profits of farming. The general complaint is "farming don't pay," and some of our best farmers say they are unable to realize any compensation whatever, after paying the necessary farm expenses.

3. About one-half of the sons of farmers leave the farms. But a very small proportion of the farms have been abandoned to wood or pasturage, perhaps one in ten or fifteen.

4. Is the fever abating? Should think not, yet some are dissatisfied and think they could make farming pay better elsewhere.

5. Farms are appraised about three-fourths their cash value. No villages in town and very little manufacturing property. No discrimination has ever been made, whatever, in favor of farmers, in making appraisal.

6. There is no pure blooded neat stock in town, although some very good mixed stock of Hereford and Durham. About the same amounts of stock kept in town as formerly. The value per animal is rather more than in former times. No disease has affected neat stock the past year.

7. No stock horses in town. Three-fourths of the horses suffered from the horse disease last fall and winter. About two cases in every one hundred proved fatal. The most of the horses which suffered from the disease have apparently fully recovered,

and are in good condition, yet some still show the effects of the disease. The value does not appear to be much lessened.

8. Sidney P. Luther, James W. Baldwin, R. A. Tabor, have Leicesters. It is thought that sheep do pay better than other stock. Sheep have suffered very little by disease. Thirty-six dogs are taxed for the year 1873. Value of sheep killed or maimed by dogs annually, twenty-five dollars.

9. Seven-eighths of the town is covered with forests. There is very little new growth, about all old growth. The amount is diminishing, as a large amount of spruce lumber is annually cut and exported to Holyoke, Mass., and points this side. None at all is manufactured in town. Names of trees, spruce, pine, birch, maple, beech, ash, hemlock, etc. Spruce and pine are the two most valuable. The largest proportion of the forests are spruce. We think there are no special varieties, as the above-named are the principal trees of any value.

10. Grass, oats, potatoes and buckwheat. No valuable new practices are adopted by the farmers. Lumber is destined to be quite a source of income to farmers, although a very large portion of the timber lands in town are now held by non-resident capitalists.

11. Very little fruit of any kind is grown in town—a few crab-apples and Canada plums. The value would be small, as there is probably not more than fifty trees in town that produce fruits.

12. The demand for farm labor is much greater than the supply, and it is with great difficulty that men or women labor can be obtained at any reasonable price. Farmers are obliged to pay from forty to fifty dollars per month through the busy season of the year, and for farm-house labor, from two to three dollars per week and very difficult to find at any price. Farmers where they hire by the season cannot get good help short of thirty or thirty-five dollars per month. These high prices of labor, together with heavy taxes, are very discouraging to the farmer, and is what he cannot long endure, as farm products do not command high prices enough to warrant such prices for labor, and farmers are pasturing more and getting along with as little labor as possible.

RANDOLPH.

[Reported by the Selectmen.]

1. There are none making money aside from a good living, the reason why is because the money taxes are so high and the highway taxes take up a good portion of the summer when farmers should be hoeing potatoes.

2. We think the farms of this town do not pay any per cent. As a general thing we think farmers live in better buildings than formerly, also have more conveniences, such as sewing machines in the house and mowing machines out doors. I do not think they have more money at interest than formerly. About the hard work and the economy we do not perceive any difference from former times.

3. We think that seven-eighths of all the young men leave the farm for the railroads and workshops and the other one-eighth would if it was not for the influence of the parents. We cannot think of any other reason for young men leaving the farm than one that there is not enough money in the farm for them.

4. We think the fever is abating in this town for the simple reason that there is not much more for the fever to feed on, or in other words the young men have almost all left us.

5. Equality of taxation, we cannot answer properly, for the reason that we are not acquainted with city or village property, as there is neither village nor store in our town.

6. There is no pure blood neat stock. There is not much change in the numbers of neat stock now than formerly. We think the value of neat stock has been doubled within the last twenty years. We have not noticed any disease amongst neat stock for the past year.

7. There is no stock horse kept in town; we depend on horses traveling through town and making a stand for a few hours once a week. We think every horse in town suffered from the horse disease last fall. No deaths from the disease. The condition of those that were sick is as good now as former springs; they are as valuable now as they would have been if they had not had the horse disease.

8. We have no leading sheep breeders in town. There are just forty sheep kept in town and it is difficult to tell what breed they are. Our farmers all talk that sheep pay better than other stock, but it appears that their practice belies them in the small

amount of sheep kept. No disease amongst sheep the past year. We suffer the most from bears among the sheep. Eleven dogs are taxed for 1873.

9. Seven-eighths of the area of the town is in wood, three-quarters old, one-eighth new. We think the consumption of lumber and wood is made up by the growth. The lumber is sawed into boards and dimension, and exported. The trees for wood are birch, beech and maple; and for timber, spruce and hemlock, and once in a while a noble old pine.

10. The leading farm crops are hay, oats and potatoes. Lumbering and cord wood seem to be the chief sources of income, and perhaps we might say here, summer travel or tourists to the mountains. This in addition to farming.

11. Fruits are not worth mentioning, except raspberries and strawberries in their wild state.

12. As regards the labor question there is more demand than supply; we have to depend on Canada for help.

SHELBURNE.

[Reported by E. D. Green.]

1. I think that very few of our farmers are making money in the sense a prosperous farmer would view it, or to that extent. They get a good living and lay up something; some more, some less.

2. I think the farmers in this town get as large dividends on the cash value of their farms as the merchant with the same amount in trade or the mechanics. They are more intelligent, live in better buildings and are more progressive every way than formerly from the fact that farming has become and is becoming more popular every day. The time was, in my memory, when the farmer was a clod-hopper in many sections, whereas, to-day in those same places the farmer is proud of his vocation, and those who looked down on him then borrow money and pay him interest and homage to-day.

3. About one-half leave home for professions, trades, etc.

4. As far as I can learn all are contented and think they can do as well in their present position as anywhere.

5. Taxes are assessed on three-fourths of the real value as nearly as appraisers can judge. The valuation of property, personal and real, is about one hundred and sixty thousand dollars,

yet there is no store or manufactory in town. It was formerly a thriving town, supported two good stores, etc., but the railroad built up Gorham six miles above and all trade centres there.

6. Col. R. I. Burbank is paying considerable attention to stock raising. What were four farms, making total six hundred acres, consolidated, constitutes his home farm. He owns two more good farms, cutting fifty tons of good hay each. He has this spring bought in Salem, Mass., three full blood Ayrshire heifers and a bull. His example will add greatly to the stock and farming interest here, as he was born and spent his minority here, since which time he has been a successful lawyer in Boston, and coming back as he has recently to his native town and putting all his capital into farms has greatly changed the views of some that farming don't pay. I see it has had a very salutary effect.

7. Every horse had the epizootic.¹ No case fatal and none that I know of have depreciated in value.

8. No leading sheep breeders; most all keep a few, from fifteen to thirty. Number of dogs taxed, twenty-four. I know of none being killed by dogs.

9. Nearly three-fourths forest: one-half new growth. Amount of wood increasing and timber decreasing. Lumber exported. Varieties, birch, beech, maple, oak, ash and some pine, spruce and hemlock.

10. Leading crops, oats, potatoes, corn, buckwheat, rye, barley and hay. Farmers are paying considerable attention to raising fruit trees.

11. Apples are plenty; none other yet.

12. We have just about enough laborers of both sexes for the demands of the town.

WHITEFIELD.

[Reported by L. J. Miner.]

There are no farmers in this town making money. The cost of help and expense of marketing the products of the farm make it impossible for the farmer to more than just get a living. Taxes are high, but our town debt is steadily decreasing and is only about six thousand dollars above our assets. The lumbering interests help us farmers very much about taxes.

Farm capital does not pay over four per cent. on the money invested. Farmers have good buildings and keep everything neat

and orderly about them which gives the farms an appearance of thrift, which is commendable, though the profits are small. Nearly all the farmers own the land they cultivate and a goodly number have money at interest. We do not use labor-saving machines as much as some towns on account of the roughness of the soil. It is very broken and rocky but produces well with a light coat of manure, and those farmers that manure highly raise crops equal to any in the State, especially potatoes, which yield from three to five hundred bushels per acre. Our total valuation is \$850,000.

The valuable timber is nearly all gone out of town, but we have extensive mills for the manufacture of lumber which are supplied with timber from Carroll. There was, at the first of April, ten million feet of timber at the various mills, and that is only about half that is manufactured during the year. Not over a third part of this is obtained in town.

We have a good many young farmers and some old ones. The old ones have the money which they made before and during the war. The younger ones have not much, only what is invested in their farms and stock, but they are as smart, energetic and industrious as any of the young men that have left the farm for other employments.

Sheep are the most profitable stock for farmers that have suitable pasturing, but neat stock takes the lead. We have no pure bloods, but we have graded stock that is very good. The largest stock kept by one farmer is forty head of horned cattle, (mostly three and four years old steers), besides horses, but no sheep. The number and value of the different kinds of stock have rather increased than diminished within the last ten years, sheep excepted.

We have several stock horses in town, and all our horses stand well in rank with other towns. Nearly every horse had the horse disease but none died, and they are now looking as well as could be expected after such a long, cold winter.

Nearly one-half of our town is covered with wood, but the timber has been taken out from it. Fires have demolished thousands of acres of our forests, and the land now lies a barren waste or is covered with a scrubby growth of poplars and small bushes that will never amount to anything for wood or timber. The most valuable woods we have are old growth pine (or corky), spruce, hemlock, white and yellow birch, maple and beech. The

most that we manufacture is pine and spruce. The lumber is nearly all exported. There is but little wood cut except for family use, with the exception of about a hundred cords that is usually drawn to the village in winter. There is none cut for the railroad.

The leading crops are hay, oats, wheat and potatoes. Great quantities of the latter have been raised in years past for starch, but for two or three years there have been but few planted, owing to the low price paid per bushel.

Good help that can be hired on a farm is very scarce. They rather work in the mills as they can get better pay and not work as many hours as farmers have to, to live. The mills employ between two hundred and three hundred hands.

There were fifty-five dogs taxed this year, and seventy-seven last year. The dog tax last year did not pay but about forty per cent. on the dollar for the sheep they killed.

A SPECIAL TOWN REPORT.

The accompanying report of a single town is given to show what the Secretary desires to obtain of other towns for the next volume. He hopes to find some intelligent and painstaking man in every town, who will undertake to present the resources of his town, in a full and exhaustive manner. The writer should begin early to examine the soil and agricultural resources, that he may communicate valuable information.

HOPKINTON.

[Reported by C. C. Lord.]

GEOGRAPHICAL.

The surface of the town of Hopkinton presents features widely different from many other towns in the vicinity. It has a character somewhat its own. It is neither as level as Concord and some other situations on the banks of the Merrimack, nor as rugged as Warner and such localities as express more sharpness and asperity of outline.

Our country is emphatically undulating. By a process of gradual elevation the low lands lead up to the hills, whose brows

are as smooth as if they had never felt the wintry blast of centuries. This feature of gentle undulation secures almost every acre to the privilege of cultivation.

There are two principal ridges in Hopkinton. Beech Hill on the eastern borders of the town and partly in Concord extends in a northerly and southerly direction from what is known as Buzwell's Corner to near the Concord road, about two miles below the south village. A journey from one end to the other of the main elevation would require about three miles of travel. Just west of this is Putney's Hill, presenting a slightly different general outline. It is about the same length, extends in about the same direction, and barring a slight depression about midway of its course, has no peculiarities of shape of any account in this connection.

A considerable portion of this town lies in the great Contoocook Valley. The Contoocook River, as it leaves the confines of Henniker, enters this town on its western boundary, and there wends its way in a somewhat zigzag course till it leaves near the northeast corner, and comes through Concord land, on its way to the Merrimack at Fisherville. Its route through the town gives us a considerable share of intervalle land, which of course is easily tilled.

The balance of our township, including its whole southern aspect, is of a medium character—neither as abrupt as the eastern nor as level as the northern and northwestern. It embraces several districts, but possesses no geographical points of special notice.

NATURE OF THE SOIL.

A New England inland town is seldom found whose soil is more generally yielding to culture. By this we mean it is porous and easily worked. Most of the upland soil, when properly plowed, works up as light as an intervalle, and excepting the stones is about as easily tilled. Its nature is a strong but not too heavy loam, which with good management is capable of a productiveness that will amply repay the farmer for his toil. A portion of Beech Hill on its northwesterly slope is colder and heavier, and the district known as Hoyt's Hill is perhaps poorer than the average of Hopkinton soil. The intervalles are generally very productive. Those fluvial lands lying farther down the stream are, if anything, inferior to those farther up. There is some land near

the banks of the Warner River, as it flows across our northern border, coursing for a short distance its way to the Contoocook, which is perhaps the poorest soil in town, being light and gravelly. More or less of this plain land is also found on the northern border of the town, in the vicinity of the Contoocook and its smaller tributaries. Upon the whole, the soil of Hopkinton averages as good as perhaps any town in Merrimack county.

HABITS OF THE FARMERS.

Mixed farming has always been the general practice in this town. The primitive custom in this respect has almost universally prevailed to this day. Some attempts at specialties, however, have been individually made, and in certain instances with success. Mr. Ira A. Putney has for many years made the dairy a prominent source of income. His custom has been to keep only cows for horned stock, and take his products to Concord weekly. Mr. John W. Page has lately given more attention to producing milk for the market. His stock of cows numbers fourteen or fifteen. Mr. James M. Conner gives a good deal of attention to dairying. In 1872 he produced and sold one thousand pounds of butter, besides what he used at home — a large quantity, since he was engaged in building a barn during the year and boarded his help at his own table. He keeps about six or eight cows. Mr. S. S. Page has also made some special efforts in this direction, though with what results we are unable to tell.

There has been little effort in the direction of stock specialties. Mr. Ware Gove gives some preference to cattle, we hear, but are not able to communicate any particulars. Mr. Daniel Dustin has for years been the sheep-man of the town, but we doubt whether at present he is doing as much in this line as formerly.

IMPROVEMENTS.

There has never been any concerted efforts among the farmers of Hopkinton. There have never been any farmers' clubs or habits of general conference. Hence, all efforts having been so individual in their character, it is difficult to estimate with any degree of certainty the amount of improvement that has in later years been made. However, the item of improvements in the construction of barns deserves a passing notice. In the olden time great heedlessness was evinced in building stock houses.

Barns were often set low on the ground, often on a hillside, and the manure thrown out of doors. Nor was the hovel floor always tight, and large quantities of the liquid manures went wholly to waste. Out of doors, the solid manure was drenched and washed by storms till much of its strength was lost. Now, all this is rapidly passing away. No one builds a barn to-day without constructing a cellar under it. With this are secured many other greater or less advantages in improved architecture. There are in the town many new barns that embody marked excellences in their construction. Among them might be noticed those of Messrs. Benjamin Lovering & Son, Charles Gould, J. M. Conner, Horace Edmunds, Moses Kimball and others.

There has little effort been made to improve the breeds of stock generally. The native blood predominates, or it is crossed indefinitely. Some years ago the Devon blood was introduced here, and traces of it are frequently seen. The Jersey has been introduced within a few years and we believe there are some thoroughbreds on the farm of Col. John H. George, of Concord, in the south-east part of the town. Mr. Joseph Barnard has lately purchased a Durham bull, and we presume his influence will sooner or later be seen in our herds.

Mr. Dustin has in years past been to some expense to introduce improved sheep stock. At the time he gave special attention to Merinos, and paid high prices for animals purchased in Vermont. Since then we have had no personal means of knowing exactly what he is aiming at in this line, but think he pays less heed to the cultivation of particular breeds since the price of wool has fallen so as to affect materially the interests of sheep-raisers.

There has been considerable drainage practiced during the last dozen years, though not as much as ought to be done. Among those who have taken more or less pains to redeem wet lands are Messrs. Charles Lord, Oliver N. French, James M. Conner, J. C. Tebbetts, Ira A. Putney, Jeremiah S. Story, and Timothy Colby.

In the purchase and trial of improved farm implements this town has perhaps done as much as other farming towns when the circumstances are relatively considered. There is hardly an improved machine capable of being used on our uneven surface that has not been tried. Improved plows, harrows and cultivators abound. Every summer the rattle of the mowing machine is heard in the fields, and in a large measure the time-honored scythe is being superseded.

There are considerable quantities of commercial fertilizers used here, and at least with a fair degree of success. Most of them are purchased in Concord markets by the different farmers individually, so it is next to impossible to approximate to a correct estimation of the amount used or the kind most preferred.

We are not a sufficient horseman to state intelligently just what improvements may have been made in this noble animal. Perhaps none of our citizens have made more efforts in this direction than have Messrs. J. C. Tibbetts and H. W. Green. The stock they have produced or cultivated has certainly possessed some fine points.

RESOURCES.

Ample room exists for the improvement of farming interests in Hopkinton. There is an abundance of resources to meet all imperative demands. We have not the opportunity here of discussing these in much detail, so will give prominence to a few of the most important ones.

The farmers of this town have resources in their own brains. The habit of interchanging intellectual ideas should be neglected by no class of agriculturists. The details of human experience are not equal. Some intelligent peculiarity obtains in each individual life. Every man understands something better than all his neighbors. Hence we see the advantage of an intercommunication of thoughts. It makes every man a teacher, and gives all an opportunity to learn. An essential promotion of this end is the farmers' club, affording discussions in a true spirit of inquiry. Without its properly managed farmers' club, no town can run the race with its neighbor whose need in this respect is supplied.

Hopkinton has large prospective chances in the nature of her soil. The earth in this locality is by no means exhausted. In one sense there is no such thing as exhausting the soil. An appearance to the contrary only indicated the lack of knowledge of the laws of the soil's action. These laws can only be discovered by observing the processes which nature works out in her own unassisted economy. The fact that Nature proves should be the guide of the true agricultural scientist.

The unredeemed lands of our locality may yet prove a source of income not yet appreciated. We are speaking now of such as need drainage. Ditching is hard, slow and generally costly work,

but if a farmer has the time and capital at his command, the income will cancel the outlay and pay a good interest. Hundreds of acres of our lands at present need nothing so much as drainage.

A MINE OF WEALTH.

Hopkinton has a practically inexhaustible fund of income in her muck-beds. Millions of loads of valuable fertilizing matter lie comparatively unappreciated within her borders. Many farms afford enough of valuable muck, if properly used, to make their owners wealthy and have a good supply left. In the very heart of Hopkinton lower village is a quantity which the right kind of enterprise might turn into a large source of profit to its owners and others living in the vicinity, while around Smith's Pond is an amount practically without limit.

There is no uniform analysis which can be ascribed to muck, or humus. The fact that it is decayed vegetable matter proves only a relative and not a superior value. But the quality of Hopkinton muck is in a large measure so valuable that we propose in a general way to consider some of its excellences.

I. *Its Nutritive Properties.* As we have already said, the fact of its being vegetable matter does not prove its superior value, but in order to illustrate its real nature we will quote from W. S. Clarke, President of the Massachusetts Agricultural College. He says:—

“Although different kinds of muck are usually much alike in their general aspect, their chemical composition is often very different. In one case the muck may have originated from the decay of a mass of forest leaves only, and must of course be very rich. In another it may have been formed from the decomposition of mosses and sedges, which contain elements of much less value; or it may consist largely of sand, and therefore comparatively worthless. In the third case it may be impregnated with protoxide of iron, which is a deadly poison to vegetation. All muck should not therefore be discarded at once, but its elements should be ascertained, and a fair trial be made before it is condemned.”

We have never had the opportunity to examine all the different kinds of muck in Hopkinton. But muck from the farm of Charles Lord will, when piled up, cover itself with vegetation in one season. Muck from the land of George K. Goodrich will, when spread on, start the grass many days earlier in the spring. These facts show the nutritive value of the specimens noticed.

This total of 226 1-2 pounds of fertilization in a year is certainly a matter of weight in the consideration of the intelligent agriculturist. Still, the assistance of water is not absolutely necessary to the actual derivation of plant-food from the air, which is full of gases arising from different sources, and profitable to be conveyed to the soil, and secured to the aid of culture. Many soils may absorb these from the upper element by direct contact simply, but the presence of vegetable matter in composition greatly facilitates the process. Mr. Lewis Bollman, Indiana says —

“Do all soils alike possess this power, or is it limited to certain parts of them only? is a question of great practical utility to the farmer. Fortunately, it is a question that he can easily determine. He may plow deeply; he may stir the soil frequently; he may subject it to the ameliorating influences of freezing; and this, in the vicinity of rich, alluvial lands, or decaying forests, or of rivers or marshes exhaling carbonic acid and other gases — it will be all in vain if the soil is worn out. *Clays or sands destitute of vegetable matter will not absorb them.* Our railroad excavations furnish many instances where the top soil has been taken away in their construction, and the farmers have plowed their places for years, and planted them in the vain hope of gradually forming a productive soil, and this, when the air is fertile with carbonic gas. The soil was destitute of carbonaceous matter.”

Dr. W. H. H. Mason, Moultonborough, member of the Board of Agriculture for Carroll County, in a lecture on Agricultural Chemistry, said any farmer who owns a sand-bank and a peat-bed had manure enough. Although there are other important points that might be adduced in this connection, we may have said sufficient to induce some tiller of the soil to take measures, if he has a muck-bed, to economize a home resource that is able to yield a large income.

A TABLE

Showing the Towns responding to the inquiries of the Secretary, and those neglecting to report.

TOWNS REPORTED.			Not reporting either year.
1871.	1872.	1873.	
Acworth		Acworth	Alexandria.
Allenstown		Albany	Alstead.
Antrim		Alton	Amherst.
		Andover	
		Antrim	
		Ashland	
		Atkinson	
		Auburn	
Barnstead		Barrington	Berlin.
Barrington		Bartlett	Boscawen.
Bath		Bedford	
Bedford		Belmont	
Brentwood*		Bennington	
		Benton	
		Bethlehem	
		Bow	
		Bradford	
		Brentwood	
		Bridgewater	
		Bristol	
		Brookfield	
		Brookline	
Campton	Campton	Campton	Cambridge.
Candia	Chester	Candia	Canaan.
Canterbury		Centre Harbor	Carroll.
Centre Harbor		Charlestown	Colebrook.
Chatham		Chester	Conway.
Chester		Claremont	Croydon.
Chesterfield		Columbia	
Chichester		Corrigan	

* Received too late for volume of 1871; published in 1872.

TABLE—Continued.

TOWNS REPORTED.			Not reporting either year.
1871.	1872.	1873.	
Claremont			
Clarksville			
Columbia			
Concord			
Cornish			
Deerfield	Dover	Dalton	Danbury.
Deering	Dunbarton	Danville	
Derry		Deering	
Dorchester		Derry	
Dummer		Dorchester	
Dunbarton		Dublin	
Durham		Dunbarton	
		Dummer	
		Durham	
Eaton	Epping	East Kingston	Elsworth.
Epping		Eaton	Errol.
Epsom		Ettingham	Exeter.
		Enfield	
		Epping	
Fitzwilliam*	Farmington	Farmington	
Franconia		Fitzwilliam	
Franklin		Francetown	
Fremont		Franklin	
		Freedom	
		Fremont	
Gilford		Gilmanton	Gorham.
Gilmanton		Gilsum	Grafton.
Gilsum		Goffstown	Greenland.
Goffstown		Göshen	
Groton		Granham	
		Greenfield	
		Greenville	
		Groton	
Hampton Falls*		Hampton Falls	Hampstead.

* Received too late for volume of 1871; published in 1872.

TABLE — *Continued.*

TOWNS REPORTED.			Not reporting either year.
1871.	1872.	1873.	
Harrisville		Hanover	Hampton.
Henniker		Harrisville	Hancock.
Hollis		Hebron	Hart's Location.
Hooksett		Henniker	Haverhill.
		Hillsborough	Hill.
		Holderness	Hinsdale.
		Hollis	
		Hopkinton	
		Hudson	
		Jefferson	Jackson.
			Jaffrey.
Keene	Keene	Keene	
Kensington	Kensington	Kensington	
Kingston		Kingston ..	
Lancaster		Lancaster	Laconia.
Langdon		Langdon	Landaff.
Lebanon		Lebanon	Litchfield.
Lempster		Lee	
Littleton		Lempster	
Londonderry		Lincoln	
London		Lisbon	
Lyman		Littleton	
Lyndeborough		Londonderry	
		Lyman	
		Lyme	
		Lyndeborough	
Manchester		Madbury	Meredith.
Marlow		Madison	Middleton.
Milford		Manchester	Milan.
Milton		Marlborough	
		Marlow	
		Mason	
		Merrimack	
		Milford	
		Milton	

TABLE OF TOWNS.

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TABLE—Continued.

TOWNS REPORTED.			Not reporting either year.
1871.	1872.	1873.	
		Monroe	
		Mont Vernon	
		Moultonborough	
Nelson	New Ipswich	Nelson	Nashua.
Newbury		New Boston	New Hampton.
Newcastle		New Durham	Newington.
New Ipswich		New Ipswich	Newport.
		New London	
		Newmarket	
		Newton	
		Northfield	
		North Hampton	
		Northumberland	
		Northwood	
		Nottingham	
		Orange	
		Oxford	
		Ossipee	
Peterborough	Pelham	Peterborough	Pembroke.
Piermont	Pittsfield	Piermont	Plaistow
Pittsfield*		Pittsburg	Portsmouth.
Plainfield		Plymouth	
Plymouth			
Rollinsford	Rochester	Randolph	Raymond.
Rumney	Rollinsford	Richmond	Roxbury.
		Ridge	
		Rochester	
		Rollinsford	
		Rye	
Salem		Salisbury	Somersworth.
Salisbury		Sanbornton	Stoddard.
Sandown		Sandown	
Sandwich		Sandwich	

* Received too late for volume of 1871; published in 1872.

TABLE—*Continued.*

TOWNS REPORTED.			Not reporting either year.
1871.	1872.	1873.	
Sharon		Seabrook	
Shelburne		Sharon	
South Hampton*.....		Shelburne	
Stark		South Hampton.....	
Stewartstown		South Newmarket ..	
Strafford		Strafford	
Stratford		Stratham	
Stratham		Swanton	
Springfield*.....		Sunapee	
Sunapee*.....		Surry	
Sutton		Swausey	
Tamworth		Tamworth	
Temple		Temple	
Thetford		Tilton	
Tuftonborough.....		Troy	
		Tuftonborough.....	
Unity		Unity	
Washington	Warner	Wakefield	Waterville.
Webster	Westmoreland	Walpole	Wears.
Westmoreland		Warner	Woodstock.
Whitefield		Watson	
Wilton		Washington	
Winchester		Webster	
Wolfeborough.....		Wentworth	
		Westmoreland.....	
		Winnet	
		Windsor	
		Winchester	
		Whitefield	
		Windham	
		Windsor	
		Wolfeborough.....	

* Received too late for volume of 1871; published in 1872.

SUMMARY.

Towns reporting in 1871	98
Towns reporting in 1872	15
Towns reporting in 1873	155
Towns reporting every year	8
Towns never reporting	47

NEW HAMPSHIRE INSANE ASYLUM FARM.

BY WILLIAM P. HILL.

The New Hampshire Asylum for the Insane, at Concord, was originally opened in October, 1842. No money was drawn from the State Treasury to buy the land and erect the original buildings, but the Legislature granted thirty shares of New Hampshire bank stock, valued at \$15,000, for its use. The estimated cost, when first opened, was \$34,054.23, the excess over the \$15,000 being furnished for the use of the State by the United Society of Shakers at Canterbury, the city of Concord and benevolent individuals. The original estimated cost was \$40,000. The buildings at first composed the centre one, forty-eight feet front by forty-four deep, with two wings for patients, each ninety by thirty-six. The original barn stood only three or four rods beyond the south wing, but was removed, two years ago, several rods west, and the new one made out of it. It was forty-two by sixty feet, eight feet posts, and cellar. The amount paid originally for the Asylum farm of one hundred and twenty-one acres was \$5,100, of which the citizens of Concord contributed \$1,000.

The Asylum, at the time of its opening, (now almost thirty-one years ago,) had accommodations for ninety persons in the two wings extending north and south from the centre building. No additions were made until the expiration of eight years, when the number had increased to one hundred and twenty-seven, in June, 1850. At this time the Chandler wing was built, adding accommodations for fifty. Three years later, to improve the quality, as well as increase the number of rooms, the old lodge was superseded by the cottage for the most difficult class of patients. In 1856-7, the Rumford extension was erected on the

south side, furnishing additional accommodations for female patients to the number of about sixty. When this was ready for use, the number had increased to one hundred and seventy, and the whole house could accommodate two hundred and thirty. Between this time and June, 1867, the number increased to two hundred and forty-six. At this time the Kent building, the last yet erected for the use of patients, was occupied, and the different buildings now furnish room for two hundred and sixty patients. In their last report (1873) to the Legislature, the Trustees say:

“A larger number of patients has been under treatment at the Asylum for the past year than during any similar period since its opening, in 1842. The whole number received has been one hundred and ninety-four, the number discharged one hundred and seventy-two, while two hundred and seventy-three* are now inmates of the Institution.”

Our limits will not permit us to enter into details in relation to the history, management, finances, and general working of the institution, the object of this paper being, more particularly, to speak briefly in relation to the farm and garden attached thereto. Still a few figures to show the large proportions the institution has attained since its opening, may not here be entirely out of place.

The Financial Agent, Joseph B. Walker, Esq., in his last report gives, for the year ending April 30, 1873, the total amount of Permanent Funds of the Institution, and the way derived, as follows: Adams fund, \$1,200; Conant fund, \$6,000; Chandler fund, \$25,900; Fisk fund, \$11,699; Kent fund, \$150,000; Kimball fund, \$6,753; Rumford fund, \$15,000; Sherman fund, \$5,000; total, \$221,552.49. This amount, it is expected, will be increased \$20,000 by a legacy of the late Miss Arabella Rice, of Portsmouth. The amount insured on the asylum property is \$77,400.

During the last year about one-half of the income of the Permanent Funds was expended in important alterations of the buildings, improving their architectural monotony, adding to their convenience, rendering the halls and rooms more cheerful and homelike, and at the same time improving the grounds; while the other half has been given to indigent patients, to assist them in paying the current expenses of their support. The amount set apart for the latter object was \$8,000, which the annual appropriation of the State increased to \$14,000. But for this timely aid,

* At this time, July 24, the number is ten or a dozen less, we believe.

large numbers could not have continued at the Institution, two hundred and eight, or about forty-six per cent., being thus assisted. The amount expended for improving the grounds was \$4,621, which was also taken from the income of the Permanent Funds.

Passing thus briefly over the financial condition of the Institution, we will proceed to the main object of this paper, to wit — a short description of the Asylum grounds, farm and garden, and a synopsis of such information as the writer gleaned, and hastily noted down, in a two hours' visit, on the 24th of July, while walking over the extensive farm and examining the barn, under a broiling sun, (the mercury stood at ninety-four degrees in the shade,) from the obliging Superintendent, Dr. J. P. Bancroft.

The grounds and farm of the Asylum cover an area of some one hundred and twenty-five acres in the westerly part of Ward six, embracing more than a third of it, bounded on the north by Pleasant street (the old Hopkinton road), on the south by Clinton leading to Dunbarton, and on the west by Fruit street, connecting these two. The easterly border is fringed by private residences, some of the best in the city, located on Spring street. The State originally obtained one hundred and twenty-one of these one hundred and twenty-five acres for \$5,100, a portion being contributed by private individuals interested in having the Asylum located here, to prevent its being placed on the grounds now comprising Blossom-Hill Cemetery, a mile or more north. Other places were also suggested in Concord, Keene, Portsmouth, etc. Many residents of Ward six, who covet the present fine location as one of the most eligible and sightly in the populous part of Concord, would probably now not object were the State out of possession. The land would doubtless sell for fifty times more than its original cost, and possibly for a much larger figure, to be used for private residences.

The Asylum buildings occupy a beautiful location about midway of the northern boundary of the grounds, a few rods south of Pleasant street. They are approached by a drive-way skirted by trees. The buildings front towards the east with a handsome lawn comprising some twenty acres, extending down to a grove of about sixty fine oaks. In this grove there is a small pavilion or "summer-house," approached by an avenue affording a beautiful retreat for the patients. It is in improving this oak grove, the finest feature of the estate, and in draining the intermediate

space, which had previously been wet at some seasons of the year, that a considerable portion of the \$4,621 expended on grounds and buildings, in 1872, was used. Since it was thoroughly under-drained, and after the snow had disappeared last spring, it was found to be as dry as the most favored localities in the vicinity. A large quantity of rocks has been removed, which is being used used to cover, in part, a ravine at the westerly side of the Asylum, through which runs "Bow Brook," after passing the romantic Asylum Pond in the rear of the buildings.

This system of drainage consists of ten, or more, lines of drain-pipe, spread like a fan over this lawn, the radii converging down to a couple of wells in the grove. These wells are six feet deep by three in diameter; and from them there is an outlet into the city sewers on Spring street. The drain-pipe tiles are of burnt clay, laid six feet deep on hemlock boards placed at the bottom of the trench, and turfed over the joints. On this is spread six inches of sand; then from twelve to fourteen inches of small cobble stones and the trench filled up with the earth first shoveled out.

Walking down into the fields south of the Asylum buildings with Dr. Bancroft, we were shown some five acres of potatoes growing luxuriantly since the heavy rains of last week. There are also three acres of corn and corn-fodder, growing well, the fodder, to be fed out to cattle in October. With this the doctor said he could keep his six oxen and twenty-six cows a couple of months. Not so much corn is being raised as formerly, now that western corn can be had for sixty-five cents per bushel.

A small field of oats was also shown, the doctor remarking that they were planted more with a view to lay the ground down to grass, to be sown in the fall. The vegetable garden extending over some five and three-quarters acres made an excellent show, considering the protracted drought this summer. But the recent rains had done much good here also, and the vegetables are growing nicely, in great variety, with wortzels, beets, cabbages, squashes, tomatoes looking the best. Onions were doing poorly, not so well as last year. This large vegetable garden requires the care of two or three hands much of the time, now and then a patient assisting in doing a little weeding, but not much as they only work for exercise, as sanitary considerations may seem to require.

Near the southern boundary of the Asylum grounds, and con-

venient to the vegetable garden, a cess-pool or reservoir, some twenty feet in diameter, has been recently excavated. It is two thousand feet south of the edifice and receives its sewerage through a brick cement drain of one foot diameter inside. The sewerage is used as much as possible to fertilize compost. Dry muck, loam, etc., is dumped into the reservoir. Before the removal of the old barn there was a reservoir just behind it, about one thousand feet from the Asylum, the smell from which, with a southerly wind, was always offensive. Their location, also, was bad, as the old farm-buildings were in the way and interrupted the view over the fine fields south of the Asylum. With new stables erected directly in the rear and the new barn several rods to the south-west, all the farming operations can now be carried on without interfering with the front of the Asylum, and those portions of the grounds especially allotted to the patients for recreation.

In 1871, the Legislature appropriated \$7,000 to remove and rebuild the old barn, stable and carriage-house, the unwholesome effluvia from which and the piggeries had, for years, annoyed the inmates of the Asylum, and their location prevented the enlargement of the southern enclosure, used by female patients, in pleasant weather, for recreation and out-door exercise. The work was in charge of J. B. Walker, Esq., and Dr. Bancroft, as a building committee. They erected a new farm barn, which cost \$6,477.37; a horse barn, \$1,453.93; carriage-house, \$611.00; barn sheds, \$921.20; a carpenter and machinists' shop, \$1,076.79; and clapboarded the ice-house, built stone culverts and laid drain-pipe at an expense of \$399.80 — the total cost of these improvements reaching \$10,940.09.

The old barns, shed and piggery were torn down, and the material, so far as sound, put into the new buildings. The new barn is the best we have ever examined, a model in its way, constructed so as to afford the animals it is designed for, room, pure air, light and clean food, in order to secure good health and make pure milk and good beef and pork. The barn is one hundred and ten by forty-five feet, with posts twenty-two feet high. The drive-way goes through the length in the middle, so that teams can pass through without difficulty, and the grade is easy at both ends. The bays for hay are on the north, being the shady and cool side. The stalls for cattle occupy the entire south side, are fifteen feet in width, and eight feet high to the scaffold

above. Sufficient number of windows are placed in the south side to make these stalls as light as an ordinary dwelling house. Five box ventilators pass up from this line of stalls to the eaves, for the escape of the vitiated air of the stalls. The windows are so suspended as to be easily moved up and down and left at any required point. The thorough lighting of the floor or drive-way is secured by windows in the ventilator surmounting the top and middle of the roof, which serves the double purpose of lighting and ventilating the centre and hay-lofts. Three large box ventilating shafts pass up from the cellar through the bays and terminate five feet above the roof. These conduct all the foul air from the piggery, in the cellar, to the open air above the roof. These, with the others just described, completely protect the hay and other feed from any contamination by gases emanating from any part of the barn, as well as invite a plentiful supply of pure air for the respiration of the animals. Two sheds, each twenty by fifty feet, are attached to the barn at right angles, one at the east and the other at the west, furnishing room for a span of working horses and farming implements in one, and for absorbents for the stalls in the other. The basements being on the level with the cattle yard form a part of it, and shelter so much of the space, and give protection to animals in storms.

During our visit to this model barn, we did not see the cows, twenty-six in number. They were out in a pasture, situated about a mile south-west of the Asylum, a tract of fifty-four acres, purchased in 1871 for about three thousand dollars, having a never failing supply of running water and well adapted for a good pasture. There were four fine working oxen in the yard and eight horses in the stables, or just harnessed to leave, which we did see. Also the best Jersey bull in the State, chained in one of the sheds, in company with three fine graded calves of his siring, which are being raised for cows. Dr. Baneroff said it was their practice to turn off, annually, three cows, and supply their places with younger ones, selected from the choicest animals, not so much with a view to the breed as to secure the largest amount of good milk at the least expense. He could not afford to raise stock for fancy. These three calves were one-half Jersey by their sire, graded between Ayrshire, Durham, Jersey and native cows.

The barn will hold one hundred and twenty-five tons of hay. It contains something more than one-half of this year's crop,

which had been secured, and thirty tons of old hay left over from last year. The granary was well-filled with Western corn, some four hundred bushels having been purchased, a fortnight ago, for sixty-five cents a bushel. The cow stable, on the south side, is arranged excellently, with plenty of light and air. The stalls are partitioned off from each other and each cow has her separate chain. At one end of the stable they can pass down an inclined platform, into the sheds below, without going outside the barn. Behind the cows, in the stable, is a *fossa*, or depression in the floor, five inches deep by eighteen wide, to catch the droppings. This is filled daily with absorbents. There are also trap-doors, through which the manure, thus made, may easily be shoveled down into the pig-pens below. In the winter, double windows are placed on the barn windows, and it seldom freezes, even in the most severe weather. In the summer, the cows get their living mainly in the pasture. In the winter, Dr. Bancroft said it was the practice to feed them altogether on cut-feed, using hay and considerable shorts moistened with boiling hot water brought from the Asylum. "Steam," he said, "would be better, but we do not dare to put in the apparatus here at the barn on account of the danger of fire." All the doors of the barn are made to slide. In each of the large main doors there is a common house door inserted, so that a person can enter easier than to lift open the large one.

Passing down from the main floor of the barn, we come to the cellar and pig-pens. These, too, are a model of neatness and convenience. There are eight pens, each fourteen by sixteen feet, with yards in front of each of the same size. The yards are two and a half feet lower than the pens, and stoned at the bottoms. The height from the pens to the barn floor is eight feet. The yards are placed on the south side of the cellar, next to the barn-yard, and are just high enough above it to allow of the pig manure being easily shoveled into a cart. Midway of the pens there is an avenue extending to the barn-yard. The flooring of this is also just high enough for the swill cart to be backed up, and a box, on wheels, containing the swill brought hot from the Asylum kitchen, is wheeled round to the troughs, and emptied without being dipped out.

Dr. Bancroft told us that he had twenty-three old hogs and thirty-three pigs here, besides three hogs at the horse-barn, another building, thirty-six by forty feet, directly in the rear of

the Asylum. The horses and carriages are kept there, all but a pair of work horses which occupy stalls in the easterly farm-barn shed. It is customary to keep from sixty to seventy-five swine, the White Chester County breed composing the largest element. These furnish more than twice the quantity of pork used at the Asylum.

On the upper side of the cellar, about under the grain room, there is a brick vegetable cellar, ten by twenty feet, with a window. On this a double window is used in winter; and, although on the north side, the doctor said it never freezes in the most severe weather.

The yards of the pig-pens are located directly under the cows' stable, which extends nearly the whole length of the south side of the barn. The perfect ventilation is remarkable, the usual smell being almost entirely absent in both stables and pig-pens.

In the cellar we also noticed a quantity of tile drain-pipe, the horse-shoe pattern, of which some four thousand were purchased last year.

We give a table showing the products of the Asylum farm for the past three years, as shown in the annual reports to the Legislature:—

	1870.	1871.	1872.
Hay	80 tons.	75 tons.	80 tons.
Corn Fodder	25 "	25 "	20 "
Straw	15 "	10 "	20 "
Corn in ear	400 bush.	450 bush.	250 bush.
Oats	200 "	200 "	300 "
Potatoes	800 "	700 "	300 "
Milk	9,500 gals.	9,535 gals.	9,500 gals.
Pigs sold	33	22	31
Calves sold	15	18	11
Pork fattened	9,104 lbs.	8,576 lbs.	8,500 lbs.

The products of the garden for the last three years are shown below:—

	1870.	1871.	1872.
Lettuce	56 bush.	25 bush.	26 bush.
Beet Greens	48 "	53 "	71 "
Beets for table	66 "	155 "	69 "
Carrots	500 "	525 "	85 "
Wortzels	475 "	1,150 "	800 "
Turnips	225 "	350 "	200 "
Cabbages	1,500 heads.	600 "	434 heads.
Tomatoes	125 bush.	105 "	72 bush.
Onions	80 "	200 "	31 "
Green Peas	10 "	18 "	12 "
Cucumbers	16 "	32 "	40 "
String and Shell Beans	12 "	29 "	30 "
Popping Corn	15 "	12 "	10 "
Rhubarb	5 "	4 "	27 "
Apples	737 "	50 "	596 "
Pears . . . . .	.....	5 "	.....
Sweet Corn . . . . .	.....	22 "	18 "
Parsnips . . . . .	.....	32 "	49 "
Early Potatoes . . . . .	.....	148 "	128 "
Millet Seed . . . . .	.....	6 "	.....
Melons	1,500 lbs.	3,660 lbs.	800 lbs.
Squashes	8 tons.	1 ton.	1,500 "
Pumpkins	2 cart loads.	.....	.....
Strawberries	50 boxes.	.....	.....
Currants	80 lbs.	.....	.....

LEVI BARTLETT.

We introduce our present volume with the portrait of the oldest agricultural writer of the present day—the venerable Levi Bartlett of Warner. It is from a photograph taken on his eightieth birthday, and is an excellent representation. The negative was furnished by Mr. Frank O. Everett of Manchester, and the copies, produced by the heliotype process, by James R. Osgood & Co., Boston, the expense having been met by subscription by natives and residents of the town, personal friends of Mr. Bartlett; and the accompanying sketch was prepared by Mr. S. C. Pattee of Warner.

Levi Bartlett was born in Warner, April 29, 1793, consequently is eighty years old at the present time, and a hale, hearty, fine old country gentleman. His early life from twelve to eighteen was spent in his father's store at Salem and Newburyport, with the exception of a few months in summer when he was allowed to work on his father's farm in Warner, for which he always had a natural taste.

In 1811 he commenced the tanning business, and carried it on until 1838. "Then," he says, "I took a God forsaken farm covered with bogs and bushes and commenced its renovation." Here Mr. Bartlett found ample scope to illustrate his theories regarding the improvement of the soil. The bogs were drained, the bushes scrubbed out, and the desert was made to bloom. He early established a reputation as a practical agriculturist and popular writer. In the autumn of 1848, he went to Boston and took charge of and edited the agricultural department of the "Boston Cultivator," which position he filled with marked ability

and success; but the close confinement of a pent-up office did not agree with his naturally stirring and active habits, his health was impaired and he was obliged to return to his farm the following summer, where the combined labor of mind and muscle soon restored to him his usual good health.

In politics he took no active part, but was once honored by receiving the nomination as a candidate for Governor, by the Whig party, but having no aspirations for that high and important position he respectfully declined the nomination.

He has always been very regular in his habits, abstaining from all intoxicating liquors as a beverage, and from highly seasoned and concentrated food: and to-day, with fourscore years hanging over his head, we find him hale and hearty and doing a good day's work in the hay field with fork, and rake, and scythe, and will turn as handsome a swarth as any man in New Hampshire. His muscle is yet firm and strong, and his brain active. There is probably no practical agricultural writer in the country who stands higher than Mr. Bartlett. His advice in agricultural matters is sought from one end of the country to the other, and is freely given. His knowledge was gained by experience in the field, and there are thousands scattered throughout the length and breadth of the land who know how to appreciate it. It has been gained by close observation, by actual experiment, and by hard work upon the soil.

More than threescore years have been devoted to the storing up of this knowledge, call it book-farming if you will, but it is sound, practical, common sense, from a sound, practical farmer, and when he passes from the stage of action may we cherish his memory as a benefactor of the American farmer.

A MISCELLANEOUS CHAPTER.

THE REPORTS FROM TOWNS.

The extended Reports from towns have been deemed too valuable to be omitted, or materially contracted, and have crowded out many papers prepared for this volume. These official statements present the true condition of the agricultural interest in the State and indicate that a "change of base" must be made. The farmer must cultivate less area and realize more liberal dividends from his investments of capital and labor. He must use improved machinery and exercise greater ingenuity to accomplish his object. He must work mentally as well as physically, and employ his mind and his muscle in those labors which will yield the most remunerating results.

A careful reading of the statements here presented will aid the New Hampshire farmer in deciding his future course, and will we are assured, lead to the abandonment of many unremunerating practices, and induce the intelligent, progressive tiller of the soil to engage in a better and more profitable system of farming.

DISEASES OF DOMESTIC ANIMALS.

The various epidemic diseases, which have prevailed among neat stock in many sections of our country, have not seriously affected New Hampshire. The pleuro-pneumonia a few years ago made its appearance in the grazing sections of Hillsborough and Sullivan counties and caused among our stock-growers an alarm that was never accompanied by material loss. The Texas fever did not reach us, and the foot and mouth disease, which proved detrimental to the farmer's interest in other States, was scarcely noticed within our borders. We need not attempt to investigate

the reason of our immunity, for that is not definitely settled, but to record the fact that others may discuss it.

Aside from that locality in Carroll county, where tradition says the old Indian Chief Chocorua pronounced a curse on the white man's cattle, our State has been remarkably favored. From reports officially made the present season, it does not appear that owners have suffered loss worth naming from any disease among their herds. Several animals belonging to Mr. Nelson of Bristol died of a peculiar disease, which has not been fully explained, and in the month of June several of the cows at the Asylum farm revealed an affection of the feet, suggestive of the foot and mouth disease. A few cases of the pleuro-pneumonia were reported in the vicinity of Seabrook.

The chronic disease in Carroll county, to which we have alluded, was formerly known as the "Burton ail," from Burton, the old name of the town of Albany, in which it existed. It still exists, and is sometimes called the *gaunt ail* from the appearance which the animal presents when suffering from it. It is not confined to horned cattle, but is often seen among sheep, but we think does not affect horses.

The symptoms, as we learn, are a shriveling of the abdomen and finally of the muscles of the animal, and unless remedies be applied, death eventually ensues. It was formerly the custom to administer fresh earth as a remedy, or to give water made muddy by the admixture of loam or clay. It has recently become the custom in that section to give occasional doses of copperas, which proves an effectual remedy. On the supposition that the disease is caused by a fungus growth on grass and other herbage which sheep and kine consume, it is probable no better antidote than copperas can be employed.

The epidemic among horses last October and subsequently, as reports indicate, was very general. In some sections of the State animals escaped, while in others not more than one-half were attacked. The number of deaths from this disease was not probably one-half of one per cent. Reports from two-thirds of the State go to show that the disease was most destructive in those cases where the animals were over-worked, or exposed to the weather, or were kept in great numbers in unventilated stables. Some towns make returns to the effect that traces of the disease still linger, though the general report is that the animals have suffered no depreciation in consequence.

In regard to sheep, reports give no malady prevailing among the flocks. The great complaint is that dogs kill, maim and worry sheep so as to cause great injury, and in some towns to wholly forbid any effort to keep these profitable domestic animals. Selectmen report that families helped by towns often keep two or three dogs, the tax on which is abated. There is a cry against bad dogs and against those persons who keep sheep-killers and never think of paying for the damage they do.

SPECIAL FERTILIZERS.

The Board of Agriculture have never officially endorsed any of the multitude of special fertilizers, though members have used many of the brands offered by the trade. Some of these they have found serviceable in absence of an adequate supply of more valuable animal dressing, and have recommended their use to supplement the limited amount furnished by domestic animals and the compost heap. They are especially serviceable, when properly made and applied, in forwarding the growing crop that it may anticipate the injurious effects of an August drought, or the more destructive influence of a September frost.

It has been our constant desire to draw the line between the valuable and the worthless articles that are presented to the public. But this is not easily accomplished, for the reason that the same brand does not attach to articles of the same intrinsic value, and even the best products of the chemist's laboratory will not produce the same results on all kinds of soil. The most that we have been able to do has been to give the results of the experiments made by our own direction, or present an analysis of the articles. We have, for the last two years, given notice that we would cause an analysis to be made of any sample which should be sent us, not by the manufacturer, but by any farmer who should purchase for his own use. But no samples were ever received, and no farmer has made a specific and formal complaint to us of any fertilizer.

A test is now in progress at the Agricultural College, which must necessarily be continued another year, which accompanied by an analysis of the soil and the article applied, cannot fail to be satisfactory in its character. It is made under the direction of a special commission, consisting of eight gentlemen appointed by different agricultural organizations in the State, one member

being named by the Board of Agriculture, one by the State Society, and one by one organization in each county. The following gentlemen constitute the commission: Joseph B. Walker, Concord, in behalf of the Board of Agriculture; F. W. Holbrook, Amherst, for the State Society; Israel P. Breed, of Unity, for the Connecticut River Valley Society; H. R. Roberts, of Rollinsford, for the Strafford County Society; B. F. Hutchinson, Milford, for the Hillsborough County Society; John L. Tallant, Concord, for the Merrimack County Society; J. F. Keyes, Ashland, for the Grafton County Society, and O. A. J. Vaughan for Belknap County. These gentlemen, excepting Messrs. Breed and Tallant, met at the rooms of the Board of Agriculture on Wednesday, May 14, and organized by choosing Judge Roberts, Chairman, and appointing James O. Adams, of the State Board, Secretary.

Whatever result is reached, it will be given through the ordinary channels at the proper time.

EXPENSES.

The bills of expense of the Board from August, 1870, the date of its organization, to June 1, 1871, the date on which the Treasurer's report was made up, were not presented until after the report was printed and therefore could not be included in the disbursements of that year. The sums paid for the year ending June 1, 1872, were \$904.68, as was announced in the Report for 1872, but did not include the cost of printing the report which was \$1040.44.

The bills for the year ending June 1873, including unpaid bills of preceding year, are as follows:

Moses Humphrey	\$64 65
W. H. H. Mason	84 26
J. F. Lawrence	93 90
Thomas Cogswell	21 20
H. R. Roberts	35 17
S. W. Buffum	35 80
John S. Walker	35 00
Jas. O. Adams, two years' expenses as Secretary and member	206 38
Jas. O. Adams, allowed for services as Secretary and making annual report	500 00
Jos. B. Walker, bill for 1872	25 38

ROOMS OF THE BOARD.

677

D. M. Clough	23 50
S. C. Pattee	25 75
J. M. Weare	49 25
D. H. Goodell	15 75
Warren Brown	10 00
Miscellaneous	8 00
	\$1233 99

To this should be added:

Secretary's salary for eight months	666 66
Printing report	1,703 67
Extra copies Report of 1871	150 00
Printing blanks, notices, etc.	315 98
Incidentals	44 78
	\$2,881 09

The bills unpaid for the year, and those contracted from June 1 to August 1, amount in round numbers to \$800.

The printing of this report is not included, but will amount to about \$2000.00.

The entire expense of the Board for three full years is \$8,860.20, or \$2,953.40 per annum.

THE ROOMS OF THE BOARD.

The Board took possession of rooms in the State House assigned by the Governor and Council in November, 1872. They have made a beginning of an agricultural library and museum, and by vote of the Legislature at the session of 1873, are soon to receive in custody the mineral and geological specimens obtained for the State by the geologist. The rooms are opened daily, when the Secretary is not away on other duties.



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ERRATA.

In the pressure and haste with which State reports are necessarily printed, a few errors occur. We call attention to the most important ones in this volume.

On page 25, thirteenth line, for *clear* read *clean*.

On page 28, sixth line from the bottom, for *they* read *he*.

On page 29, fourteenth line from the bottom, for *later* read *utter*.

On page 47, twelfth line, for *ten* read *two*.

On page 59, sixth line, for *inst.* read *January*.

On page 70, second line from the bottom, for *is* read *was*.

On page 82, eleventh line, for *gentleman* read *gentlemen*.

On page 106, fourth line, omit the final *s* in *salvations*.

On page 107, in last line of extract, for *hooded* read *loaded*.

On page 119, in second line of "Meeting at Wilton," after *19th*, supply of *December*.

On page 127, in fifth line of "Cheshire County Society," for *ult.* read *September*.

On page 148, in eleventh line, after *manures*, supply semi-colon; in bottom line, for *top* read *tap*.

On page 155, third line from the bottom, after *spouts* supply *and*.

On page 160, first line, for *guine* read *geine*.

On page 173, fifth line, for *Piscataquis* read *Piscataqua*.

On page 235, fourth line, for *lay* read *buy*.

On page 243, in credit of quotation, for *Caddie* read *Cuddie*.

On page 256, under "Fig. 11," for *plan* read *plow*, and for *sides* read *ridges*.

On page 316, seventeenth line from bottom, for *made* read *make*.

On page 456, twelfth line from the bottom should read *seeded down to grass, that paying best, etc.*

A misstatement is made on page 38, in regard to the dry matter in one thousand pounds of green manure. Mr. Pattee said: "One thousand lbs. of fresh cow manure gave about 160 lbs. of solid dry substance; in general, nitrogen therein, 3; mineral substances therein, 24, such as potash, lime, phosphoric acid, common salt, etc. The urine from cows fed on hay and potatoes gave 80 of dry matter, 8 lbs. of nitrogen therein, and 20 of mineral substances, in general.

he

